

**Groundwater Monitoring Plan  
Quarterly Monitoring Report No. 8  
(October through December, 2004)**

**Chester Waterfront Redevelopment Project  
Chester, Pennsylvania**

**October 2005**

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**Chester Waterfront Redevelopment Project  
Chester, Pennsylvania**

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## 1.0 INTRODUCTION

Exelon Power (formerly PECO Energy Company) has completed a *Remedial Investigation/Risk Assessment/Remedial Alternatives Analysis (RI/RA/RAA) Report* for the Chester Waterfront Redevelopment Project Site (Brown and Caldwell, 2002). The Project Site consists of approximately 90 acres situated along the Delaware River in Chester, Pennsylvania. The Project Site includes the former Chem Clear facility, which was investigated under a RCRA Order from the USEPA. The Chester Project was conducted under the Pennsylvania Department of Environmental Protection's (PADEP) Land Recycling Program (i.e., Act 2), in cooperation with the USEPA. The RI/RA/RAA Report was submitted to USEPA for review on March 23, 2000 and to the PADEP on June 13, 2000. The PADEP approved the Report in their September 11, 2000 letter.

During a meeting on September 7, 2000 among USEPA, PADEP, Exelon Power, and Brown and Caldwell (Exelon Power's consultant), USEPA requested that Exelon Power develop a Groundwater Monitoring Plan (GMP) for the site. The details of the GMP were further discussed at a meeting among these same participants on September 19, 2002, following USEPA's issuance of their Statement of Basis for the Project Site. USEPA approved the GMP (Brown and Caldwell, 2002) with the condition that sampling for metals and polynuclear aromatic hydrocarbons (PAHs) include both unfiltered and filtered samples during the first two quarterly sampling events.

The purpose of the GMP was to collect groundwater quality data from a network of monitoring wells in order to substantiate the existing groundwater quality data and to verify that conditions are in equilibrium and not expected to worsen over time. Although the groundwater pathway was eliminated as an incomplete pathway during the Act 2 Site-Specific approach, shallow groundwater from the site discharges to surface water (i.e., the Delaware River). Thus, the quality of water in the river adjacent to the Project Site is dependent, in part, on the groundwater quality beneath the Project Site. The RI/RA/RAA Report demonstrated that the existing groundwater quality conditions are protective of surface water quality.



The GMP was developed to address USEPA's concerns, and is not intended to be an "attainment" plan under Act 2. Because the groundwater pathway was eliminated in accordance with the Act 2 approach used, demonstrating attainment of groundwater quality was not required.

## 1.1 Background

A fate and transport analysis (FTA) was conducted in accordance with Act 2 (Section 250.404) to support the Act 2 Site-Specific approach selected for the Project Site. The primary objective of the FTA was to develop an understanding of the dynamics of the subsurface system, namely the interaction of site constituents with the soil/fill, groundwater, and surface water. With this understanding, the occurrence, movement, and disposition of constituents within the subsurface could be reasonably predicted.

The FTA conducted for the Project Site consisted of several components, including the following:

- V-Leach modeling in the vadose zone,
- Synthetic Precipitation Leaching Procedure (SPLP) sampling and analysis,
- Groundwater modeling,
- Groundwater trend analysis,
- Light Non-Aqueous Phase Liquid (LNAPL) evaluation, and
- Surface water modeling.

The FTA yielded compelling support for the premise that the shallow groundwater system beneath the Project Site is in equilibrium with the source areas and the Delaware River. A system in equilibrium indicates that groundwater constituent concentrations and constituent mass flux to the river are not expected to increase over time, but, instead, should decrease as the sources are depleted. A complete discussion of the FTA is included in Section 9.0 of the RI/RA/RAA Report.



### Surface Water Modeling

The surface water modeling was not only a component of the FTA, it was also performed in response to the Act 2 requirement (Sections 250.309 and 250.406) to evaluate site-related surface water quality resulting from a diffuse groundwater discharge. As part of the surface water modeling, in-stream river concentrations were estimated and then compared to Pennsylvania and Delaware River Basin Commission (DRBC) criteria, as well as “alternative” criteria for those constituents without Pennsylvania or DRBC criteria. As input into the surface water model, extremely conservative estimates of constituent mass fluxes (based on 90<sup>th</sup> percentile groundwater concentrations) were used. These values were based on measured groundwater quality data from the Project Site and groundwater flow discharge rates to the river determined by the calibrated groundwater model. The groundwater modeling process involved dividing the Project Site into three “Flow Tubes” situated parallel to the direction of groundwater flow. Flow Tube 1 consisted of that portion of the Project Site upstream from the former PICCO/Chem Clear facilities. Flow Tube 2 consisted of the former PICCO/Chem Clear facilities. Flow Tube 3 consisted of that portion of the Project Site downstream from the former PICCO/Chem Clear facilities. The three flow tubes are illustrated on Figure 1.

As described in detail in Section 8.0 of the RI/RA/RAA Report, no modeled surface water constituent concentrations exceeded an associated surface water criterion within the mixing zone or at the point of complete mixing in the river. Using the most conservative scenario (low river flow at the point of discharge from the Project Site), only acenaphthylene slightly exceeded the lowest associated surface water criterion. Because there was no Pennsylvania or DRBC surface water criterion for acenaphthylene, an alternative criterion was applied. This alternative criterion was the Wyoming Department of Environmental Quality aquatic life water standard. For this compound, as well as virtually all of the organic compounds modeled, the estimated mass flux from Flow Tube 2 drove the predicted concentrations in the river.



## 2.0 GROUNDWATER MONITORING PLAN

### 2.1 Monitoring Well Network

The monitoring well network for the GMP consisted of 11 shallow wells located on the former PICCO/Chem Clear facilities that are within the modeled Flow Tube 2. These 11 wells were MW-1, MW-2, MW-3, MW-4, MW-5, MW-9, MW-11, MW-12, MW-13, MW-14, and MW-15. The locations of these wells are illustrated on Figure 1. This monitoring well network is considered representative of shallow groundwater quality that discharges to the Delaware River. Each of the monitoring wells, except for MW-9, MW-13, and MW-14, included in the monitoring network met the following two selection criteria at the time of network selection:

1. They were shallow monitoring wells representative of groundwater flow through Flow Tube 2, and
2. They have not indicated measurable amounts of light non-aqueous phase liquid (LNAPL) during the various rounds of fluid level measurements (see Table 7-1 in the RI/RA/RAA Report).

Monitoring wells MW-9, MW-13, and MW-14 satisfied the first selection criterion, but measurable amounts of LNAPL have been detected in these three wells at least one time. In fact, wells MW-9 and MW-14, along with MW-6, have been used to recover LNAPL via passive product recovery systems as part of the Interim Measures.

### 2.2 Constituents of Concern

Seven (7) organic compounds and four (4) metals have been identified as constituents of concern (COCs) to be monitored and reported as part of the GMP. The selection of these constituents was based on their frequency and level of detection in groundwater at the site, and on results of the mass balance surface water modeling performed to address diffuse, non-point source discharges to the Delaware River. These 11 constituents consist of: 1) the



volatile organic compounds (VOCs) benzene, toluene, ethylbenzene, and xylenes (BTEX); 2) the polycyclic aromatic hydrocarbon (PAH) compounds 2-methylnaphthalene, naphthalene, and acenaphthylene; and 3) the metals arsenic, beryllium, cadmium, and lead. Of these constituents, the BTEX compounds have been included because they are indicative of former operations and activities at the former PICCO/Chem Clear facilities, and were the VOCs detected most frequently and at the higher concentrations in groundwater samples from the Project Site (see Table 7-2 in the RI/RA/RAA Report). The PAH compounds 2-methylnaphthalene and naphthalene are also indicative of former activities at the Project Site and were the semivolatile organic compounds detected most frequently and at the higher concentrations in groundwater samples from the Project Site (see Table 7-3 in the RI/RA/RAA Report). The final PAH compound proposed for inclusion in the monitoring program is acenaphthylene. Under the most conservative surface water modeling scenario, the predicted concentration of this compound in the Delaware River was slightly above the corresponding surface water criterion (i.e., the ratio of predicted concentration to the standard was 1.29 using the Wyoming water quality standard). The predicted concentrations of other compounds were typically well below the corresponding surface water criteria.

The metals included are generally those that were detected most frequently at the site and considered to be good indicators of possible anthropogenic contamination.

### 2.3 Monitoring Frequency and Duration

The FTA established that there was equilibrium among the groundwater system, the source areas, and the Delaware River at the Project Site. As such, little if any change in groundwater quality over time is expected, particularly any increasing trends in concentration. Therefore, the monitoring well network consisted of quarterly sampling for a period of two years, resulting in a total of eight sampling events.

Sampling procedures and health and safety procedures were consistent with those employed during the RI/RA/RAA fieldwork for the project, and the subsequent Act 2 remediation. Because PAHs and metals were analyzed for, the sampling procedure consisted of employing low-flow sampling techniques to minimize the potential for the inclusion of metal

or PAH-containing suspended solids in the samples. At the request of USEPA, the samples tested for metals and PAHs during the first two quarterly sampling events included both unfiltered and filtered samples. The filtered samples were field-filtered through an in-line 45-micron filter to further ensure that the soluble fraction is analyzed. Based on comparable results from the unfiltered and filtered sample fractions from the first two quarterly events, future sampling events included only unfiltered samples. The filtered versus unfiltered sample comparison was discussed in the first two quarterly reports (Brown and Caldwell, 2004A, 2004B).

## 2.4 Compliance Evaluation

The compliance evaluation consists of two primary components. These components are: 1) comparison of groundwater quality data to “target concentrations” presented in the GMP; and 2) a trend analysis of each of the constituents of concern over time. These two components of the compliance evaluation are described below:

### Comparison of Measured Data to Target Concentrations

The target concentrations are groundwater constituent concentrations, below which will not result in a predicted surface water exceedance of the corresponding surface water criterion at the point of discharge in the river. Derivation of the target groundwater concentrations consisted of the following three steps:

1. A “critical” mass flux was calculated for each of the 11 constituents of interest. This mass flux would result in a predicted surface water concentration equal to the corresponding surface water criterion. Similar methodology as that described in Section 8.0 of the RI/RA/RAA Report was used to calculate these values.
2. The sum of the mass fluxes from Flow Tubes 1 and 3 were subtracted from the critical mass flux from Step 1 to establish the critical mass flux from Flow Tube 2 that would result in a predicted surface water concentration equal to the corresponding surface water criterion. The mass fluxes from Flow Tubes 1 and 3 were assumed to be constant (i.e., in equilibrium) over time and equal to the



original mass fluxes established for those tubes in Section 8.0 of the RI/RA/RAA Report. As previously stated, Flow Tube 2 (i.e., former PICCO/Chem Clear facilities) is the focus of the GMP.

3. The target concentration criteria were established for the 11 constituents of interest. Because the groundwater flux from the flow tubes essentially remains constant over time, the same groundwater flux that was originally used (see Section 8.0 of the RI/RA/RAA Report) was again used to calculate the concentration for each of the 11 constituents of interest that, when multiplied by the groundwater flux, yields the critical mass flux for Flow Tube 2, as established in Step 2. The established target concentration criteria represent the representative 90<sup>th</sup> percentile concentrations for Flow Tube 2 that would result in predicted surface water concentrations equal to the corresponding surface water criteria. Therefore, if measured 90<sup>th</sup> percentile concentrations obtained from individual sampling events of the GMP are at or below these target concentration criteria, then they are protective of the Delaware River.

The values used in the above three steps, and the resulting derived target concentration criteria, are presented in Table 1. A basic assumption of this target criteria derivation method is that the GMP monitoring network wells in Flow Tube 2 are representative of the groundwater discharging to the river. Review of the locations of the wells and existing analytical data from them indicate that this is a reasonable assumption.

The compliance evaluation ensures that the representative groundwater quality (from wells in Flow Tube 2) does not result in an adverse impact to the Delaware River. This involves calculating the 90<sup>th</sup> percentile concentration for each of the monitored constituents for the monitoring network wells during each sampling event and comparing that concentration to the respective established target concentration discussed above. The measured 90<sup>th</sup> percentile groundwater concentrations were also compared to the original 90<sup>th</sup> percentile concentrations used in the original mass flux and surface water modeling efforts, as described in Section 8.0 of the RI/RA/RAA Report. This comparison was designed to indicate whether or not there is an increasing trend in representative groundwater

concentration discharging from Flow Tube 2 over time. The original 90<sup>th</sup> percentile concentrations established for the 11 COCs are also shown on Table 1.

### **Trend Analysis**

A trend analysis was performed for each of the 11 COCs, and for each monitoring well in the monitoring network. The data included in the trend analysis consisted of the new data collected during implementation of the GMP, as well as previous data collected from the wells from 1994 to present. Initially, a statistical evaluation of the data trends was also planned. However, review of the data suggests that such an evaluation would not add significantly to the understanding of the data trends. Instead, the data have been evaluated on a parameter by parameter basis and well by well. Although identification of an increasing trend would not indicate that compliance criteria have been exceeded, it would serve as an indication that groundwater quality in that well should be further evaluated to ensure that future groundwater discharge to the Delaware River would not exceed the appropriate surface water criteria. A decreasing trend over time would reflect depletion of the source area(s). The trend analysis presented in this eighth and final quarterly report will determine whether further monitoring or corrective measures are appropriate.



### 3.0 FINDINGS AND CONCLUSIONS

#### 3.1 Groundwater Sampling and Analysis

The eighth and final quarterly (Q8) sampling event associated with the GMP occurred from November 9, 2004 through November 11, 2004. Of the 11 monitoring wells included in the monitoring well network, 9 were sampled by Brown and Caldwell personnel. The two wells not sampled during the Q8 event were MW-1 and MW-3. Well MW-1, along with MW-9 are replacement wells for the original wells that could not be located during the first two quarterly sampling events (i.e., Q1 and Q2) and were apparently destroyed during road construction by contractors working for the current property owner/developer. This observation was reported to the USEPA and PADEP Project Managers, and it was agreed to replace these two wells. Wells MW-1 and MW-9 were replaced on August 12, 2003. MW-1 contained measurable amounts of LNAPL during the Q8 sampling event and therefore was not sampled. The other well not sampled during Q8 was MW-3. This well was sampled during the Q1 through Q6 events but could not be located during the Q7 or Q8 events. This well was apparently destroyed during site redevelopment by contractors working for the current property owner/developer. This observation was reported to the USEPA and PADEP Project Managers. Finally, MW-14 was sampled during the Q6 through Q8 events, but was not sampled during any of the previous five quarterly sampling events due to the presence of LNAPL in the well at the time of sampling.

The groundwater samples obtained from the 9 wells sampled were sent to ELAB of Tennessee for analysis of the COCs, including select VOCs (benzene, toluene, ethylbenzene and toluene), PAHs (naphthalene, 2-methylnaphthalene and acenaphthylene), and metals (arsenic, beryllium, cadmium and lead). QA/QC samples included a field duplicate sample from well MW-5, a field rinsate blank, and a MS/MSD sample. The analytical reports, along with field data sheets are included in Appendix A.

## 3.2 Groundwater Quality Compliance Evaluation

The Q8 analytical data are summarized in Table 2. With regards to MW-5 and the field duplicate from that well, the highest reported concentration has been included in Table 2.

Review of the laboratory reports and QA/QC data indicates that the data are valid for use in the prescribed data evaluation.

### 3.2.1 Comparison to Target Concentrations

Following the protocol discussed in Section 2, representative 90<sup>th</sup> percentile concentrations in groundwater beneath the site (within flow tube 2) for the COCs were calculated using the data from the Q8 event. These values are shown in Table 3, along with the original representative concentrations determined during the Remedial Investigation and those associated with the Q1 through Q7 events. The threshold target concentrations are also shown in Table 3, and represent the maximum allowable representative groundwater concentration that is considered protective of the Delaware River and the associated surface water criteria.

Review of Table 3 yields three readily apparent observations, as follows:

1. The Q8 representative concentrations for all but two of the COCs (arsenic and beryllium) are significantly lower than those derived from the original data used nearly six years earlier during the RI.
2. Representative COC concentrations based on the Q8 data are lower than, and typically orders of magnitude lower than, the threshold target concentrations, indicating that groundwater discharge from the Site to the Delaware River is not adversely impacting river water quality.
3. The Q8 representative concentrations are fairly consistent with those derived from the Q3 through Q7 events and noticeably higher than the Q1 and Q2 events for several of the COCs. This occurrence is driven by the significantly higher



concentrations observed in well MW-15 during the Q3 through Q5 events, and the addition of the MW-14 groundwater quality data during the Q6 through Q8 events, from a well that had not ever been sampled before due to the prior presence of LNAPL.

### **3.2.2 Trend Analysis**

The Q8 event represents the eighth and final quarterly sampling event to be conducted as part of the GMP. Therefore, the most comprehensive evaluation of concentration trends has been performed as part of this report. For illustrative purposes, the data trends through Q8 for the COCs have been graphed, along with the available historical data obtained from the monitoring network wells since 1994, although no samples were collected from 1998 until the Q1 event in February 2003. For the purpose of graphing, those data reported as “none detected” or “below the reportable limit” were assigned a value of zero. The graphs for all sampling events are presented as Figures 2 through 11 and are discussed below, by well.

#### **MW-1**

Well MW-1 contained measurable LNAPL during all of the quarterly sampling events and therefore was not sampled during the program and no concentration graph has been prepared.

#### **MW-2**

Graphical presentation of groundwater quality data from well MW-2 is presented as Figure 2. As the graph indicates, concentrations for most of the COCs indicate subtle fluctuation during the eight quarterly events, but remain significantly lower than the 1998 sampling event. No well-defined increasing trend over time is apparent for any of the COCs.

#### **MW-3**

Graphical presentation of groundwater quality data from well MW-3 is presented as Figure 3. As the graph indicates, concentrations of the COCs show a relatively stable trend over the first six quarterly events, and generally lower concentrations as compared to

previous sampling events. No well-defined increasing trend over time is apparent for any of the COCs. This well could not be located during the Q7 or Q8 events, and assumed to have been destroyed during site redevelopment. However, the available data from this well are fairly conclusive that none of the COCs would be expected to increase over time.

#### **MW-4**

Graphical presentation of groundwater quality data from well MW-4 is presented as Figure 4. As the graph indicates, concentrations for most of the COCs indicate subtle fluctuation during the eight quarterly events, but remain significantly lower than the 1998 sampling event. No well-defined increasing trend over time is apparent for any of the COCs.

#### **MW-5**

Graphical presentation of groundwater quality data from well MW-5 is presented as Figure 5. As the graph indicates, concentrations for several of the COCs increased from 1994 to 1998, but then have dramatically decreased to the levels measured during the Q1 and Q2 events. Several of the COCs indicate a concentration increase from the Q2 event to the Q4 event, followed by a sharp decrease during the Q5 and Q6 events, and subtle increase during the Q7 and Q8 events. This well is located within an area experiencing significant earth moving and redevelopment activity and the observed fluctuations are likely in response to local, short-term disturbances of soil conditions and the groundwater system. No well-defined increasing trend over time is apparent for any of the COCs.

#### **MW-9**

Graphical presentation of groundwater quality data from well MW-9 is presented as Figure 6. This well location was not available for sampling during Q1 or Q2. As the graph indicates, there is a sharp decrease in concentration from 1998 to Q3 for those COCs detected in 1998, and concentrations have remained stable through Q8. In fact, only three COCs were detected in MW-9 during Q3 and none of the COCs were detected during the Q4 through Q8 events. No well-defined increasing trend over time is apparent for any of the COCs.



### MW-11

Graphical presentation of groundwater quality data from well MW-11 is presented as Figure 7. As the graph indicates, none of the COCs have been detected since the Q2 event, suggesting an overall decreasing trend over time. No well-defined increasing trend over time is apparent for any of the COCs.

### MW-12

Graphical presentation of groundwater quality data from well MW-12 is presented as Figure 8. As the graph indicates, concentrations for several of the COCs fluctuated during the first seven quarterly events, but remain significantly lower than those measured in 1998. No well-defined increasing trend over time is apparent for any of the COCs.

### MW-13

Graphical presentation of groundwater quality data from well MW-13 is presented as Figure 9. As the graph indicates, concentrations for all COCs have either remained relatively stable or have shown a sharp decrease from the 1998 event through the Q4 event, with a subtle increase in concentration for a few COCs during Q5 and relatively stable concentrations through Q8. No well-defined increasing trend over time is apparent for any of the COCs.

### MW-14

The Q8 event represents just the third time this well has been sampled since it was installed in 1998. During all previous sampling events, MW-14 contained significant quantities of LNAPL and therefore was never sampled. In fact, MW-14 was extensively used in the past for the passive removal of LNAPL as part of the Interim Measures. Activation of the newly constructed groundwater collection trench has apparently resulted in the elimination of measurable LNAPL in well MW-14. The concentrations of the COCs from the Q6 through Q8 events are graphed on Figure 10. Due to the limited data set, no discernable data trends can be established. Concentrations of some of the COCs have increased, while others have either decreased or remained stable. However, the lack of LNAPL in this historically LNAPL-laden well suggests improvement in groundwater conditions at this location and reduction of LNAPL discharge to the river.

### **MW-15**

Graphical presentation of groundwater quality data from well MW-15 is presented as Figure 11. As the graph indicates, concentrations of the COCs generally were stable or decreased through the Q2 event, then increased during the Q3 event for a few COCs. Concentrations remained fairly stable during the Q3 through Q5 events, and indicate a marked decrease during the Q6 event, and have remained relatively stable through Q8. No well-defined increasing trend over time is apparent for any of the COCs.

### **3.3 Conclusions**

Based on the findings of the GMP sampling events (Q1 through Q8), the following conclusions are drawn:

- Representative COC concentrations in groundwater discharging into the Delaware River, derived from groundwater quality data from the GMP sampling events, are well below the threshold target concentrations and do not result in adverse effects to surface water quality.
- Trend analysis indicates generally stable, naturally fluctuating, or decreasing trends in COC concentrations in groundwater over time. Concentrations would not be expected to increase over time.
- Data obtained and evaluated from the eight GMP sampling events clearly show no increasing trends over time for any of the COCs and support the premise outlined in the RI/RA/RAA Report that the groundwater system is in general equilibrium with the source areas and river.
- Concentration of the COCs in groundwater are expected to decrease over time, as the source material is depleted. However, the timeframe for significant improvement in groundwater quality could be lengthy.



### 3.4 Recommendations

Based on the findings of the eight GMP sampling events, the groundwater system at the Site is in general equilibrium with the source areas and river and no further sampling is necessary.

#### 4.0 REFERENCES

- Brown and Caldwell, 2000. Remedial Investigation/Risk Assessment/Remedial Alternatives Analysis (RI/RA/RAA), Chester Waterfront Redevelopment Project, March 2000.
- Brown and Caldwell, 2002. Groundwater Monitoring Plan, Chester Waterfront Redevelopment Project, October 2002.
- Brown and Caldwell, 2004A. Groundwater Monitoring Plan Quarterly Monitoring Report No. 1 (January through March, 2003), Chester Waterfront Redevelopment Project, November 2004.
- Brown and Caldwell, 2004B. Groundwater Monitoring Plan Quarterly Monitoring Report No. 2 (April through June, 2003), Chester Waterfront Redevelopment Project, November 2004.



## TABLES

**TABLE 1**  
**DERIVATION OF GROUNDWATER MONITORING PLAN TARGET CRITERIA**

Constituent of Interest	Critical Mass Flux From All Three Flow Tubes (kg/day) <sup>a</sup>	Sum of Constant Mass Flux from Flow Tubes 1 and 3 (kg/day) <sup>b</sup>	Critical Mass Flux from Flow Tube 2 (kg/day) <sup>c</sup>	Original 90 <sup>th</sup> Percentile Conc. in Flow Tube 2 Using all Wells (ug/L) <sup>d</sup>	TARGET CRITERIA
					90 <sup>th</sup> Percentile Concentration in Flow Tube 2 that Corresponds to the Critical Mass Flux (ug/L) <sup>e</sup>
Benzene	1.8	0.02	1.780	13,370	30,394
Toluene <sup>f</sup>	5427	0.002	5,426.998	8,240	92,584,811
Ethylbenzene <sup>f</sup>	899	0.0005	899.000	4,300	15,340,071
Xylenes <sup>f</sup>	217	0.002	216.998	16,200	3,704,286
Acenaphthylene	0.005	0.002	0.003	76	51
2-Methylnaphthalene	2702	0.00	2,702.000	480	46,155,160
Naphthalene	180	0.02	179.980	5,760	3,076,216
Arsenic	89.5	0.095	89.405	35	1,526,143
Beryllium	0.24	0.007	0.233	2	3,977
Cadmium	1.5	0.006	1.494	14	25,503
Lead	3.3	2.18	1.120	93	19,118

Notes:

- a - Mass flux which results in a  $C_{\max}$  to Surface Water Standard ratio of 1.0.
- b - Mass flux as originally calculated for Flow Tubes 1 and 3 (see Section 8.0 in the RI/RA/RAA Report). This mass flux is minimal and considered to be constant (i.e., in equilibrium) over time.
- c - This mass flux is the difference between the critical mass flux from all three flow tubes and the sum of the constant mass flux from Flow Tubes 1 and 3.
- d - Original 90<sup>th</sup> percentile concentrations as presented and discussed in Section 8.0 of the RI/RA/RAA Report.
- e - Target Criteria are those 90<sup>th</sup> percentile concentrations that would result in a predicted concentration in the river that would equal the corresponding surface water standard. Therefore, measured 90<sup>th</sup> percentile concentrations derived from the monitoring network that are less than these Target Criteria are protective of the river.
- f - The SPLP 90<sup>th</sup> percentile concentration was higher than the groundwater quality 90<sup>th</sup> percentile concentration. Therefore, the SPLP 90<sup>th</sup> percentile concentration was used to calculate the mass flux presented in Section 8.0 of the RI/RA/RAA Report.

**TABLE 2**  
**Q8 GROUNDWATER QUALITY DATA**

Parameter	MW-1	MW-2	MW-3	MW-4	Concentration (ug/L)						
					MW-5	MW-9	MW-11	MW-12	MW-13	MW-14	MW-15
Benzene	NS <sup>1</sup>	5.4	NS <sup>2</sup>	2.8	54	BRL	BRL	1.1	650	9400	1100
Toluene	NS <sup>1</sup>	0.46	NS <sup>2</sup>	BRL	22	BRL	BRL	BRL	26	13000	1600
Ethylbenzene	NS <sup>1</sup>	4.5	NS <sup>2</sup>	0.78	520	BRL	BRL	0.69	360	680	34
Xylenes	NS <sup>1</sup>	1.3	NS <sup>2</sup>	1.4	240	BRL	BRL	0.27	520	2600	110
Naphthalene	NS <sup>1</sup>	BRL	NS <sup>2</sup>	2.2	170	BRL	BRL	2.2	200	360	100
2-Methylnaphthalene	NS <sup>1</sup>	BRL	NS <sup>2</sup>	BRL	7.8	BRL	BRL	BRL	43	150	BRL
Acenaphthylene	NS <sup>1</sup>	BRL	NS <sup>2</sup>	BRL	1.3	BRL	BRL	BRL	BRL	BRL	BRL
Arsenic	NS <sup>1</sup>	9.9	NS <sup>2</sup>	BRL	5.3	BRL	BRL	BRL	6	22	90
Beryllium	NS <sup>1</sup>	BRL	NS <sup>2</sup>	BRL	BRL	BRL	BRL	BRL	BRL	BRL	16
Cadmium	NS <sup>1</sup>	BRL	NS <sup>2</sup>	1.6	BRL	BRL	BRL	BRL	BRL	BRL	BRL
Lead	NS <sup>1</sup>	8.7	NS <sup>2</sup>	BRL	BRL	BRL	BRL	BRL	37	3.3	BRL

**Notes:**

- Data presented in data are the highest concentrations among the "Duplicate" sample and the original sample that was duplicated (MW-5).

BRL - Parameter was not detected at or above the reporting limit.

1 - Monitoring well was not sampled during this event due to the presence of measurable LNAPL.

2 - Monitoring well was not sampled. This well was apparently destroyed by contractor redeveloping the site for others.

TABLE 3

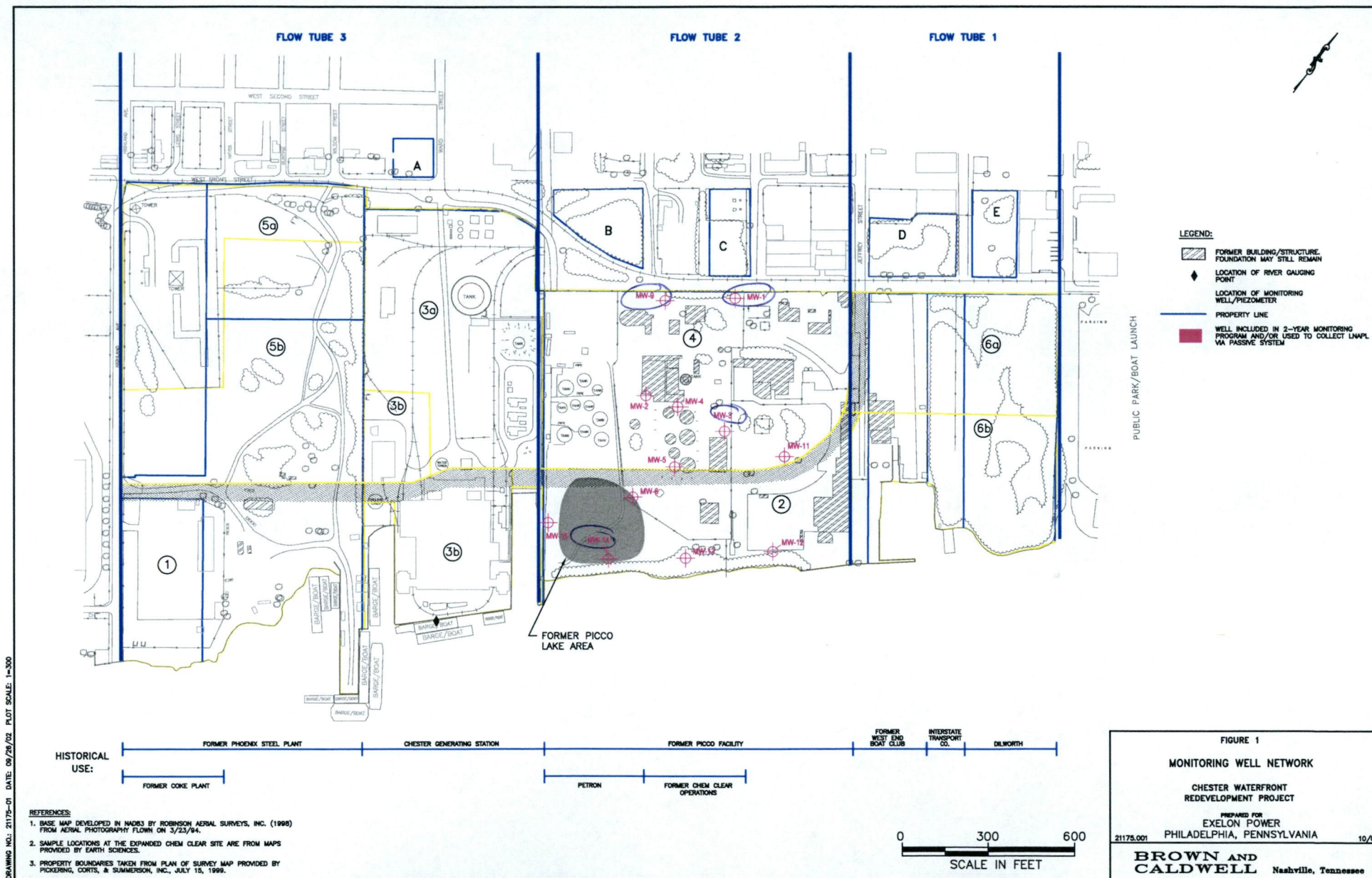
90<sup>th</sup> PERCENTILE CONCENTRATIONS

<u>Parameter</u>	<u>Original</u>	<u>90<sup>th</sup> Percentile Concentration</u>								<u>Threshold</u>
		<u>Q1</u>	<u>Q2</u>	<u>Q3</u>	<u>Q4</u>	<u>Q5</u>	<u>Q6</u>	<u>Q7</u>	<u>Q8</u>	
Benzene	13,370	940	382	1,160	1,900	1,664	1,505	2,784	2,760	30,394
Toluene	8,240	282	30	2,010	3,680	2,221	2,640	4,160	3,880	92,584,811
Ethylbenzene	4,300	351	224	514	1,040	204	273	368	552	15,340,071
Xylenes	16,200	768	362	776	2,020	700	735	864	936	3,704,286
Naphthalene	5,760	369	360	516	430	560	126	432	232	3,076,216
2-Methylnaphthalene	480	47	36	46	51	50	33	78	64	46,155,160
Acenaphthylene	76	3	3	16	17	7	3	3	3	51
Arsenic	35	14	20	22	22	127	20	23	36	1,526,143
Beryllium	2	3	3	6	7	62	3	3	5	3,977
Cadmium	14	1	1	1	3	3	1	1	1	25,505
Lead	93	3	49	9	4	28	10	10	14	19,118

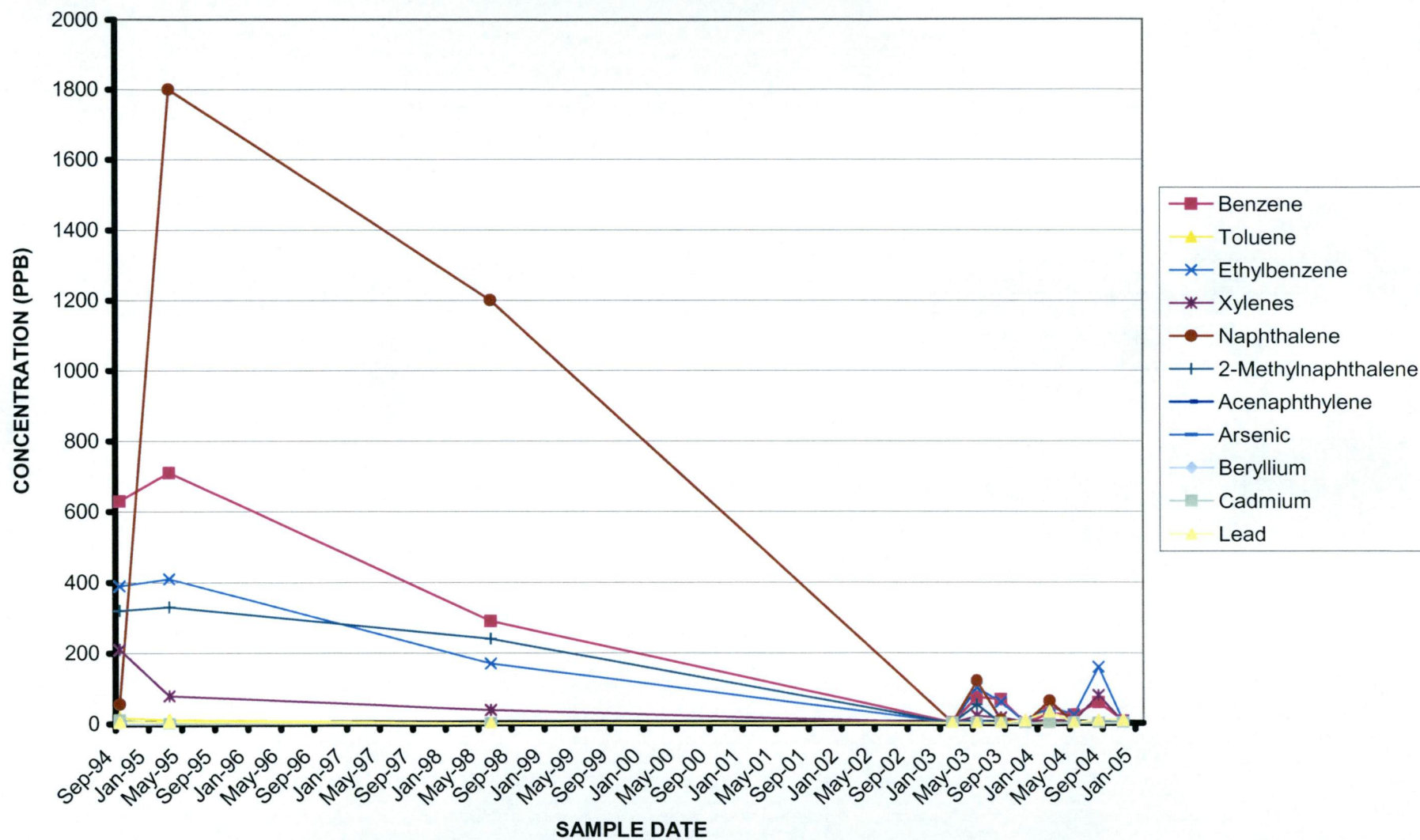
Concentrations are in ug/l (ppb).

## FIGURES



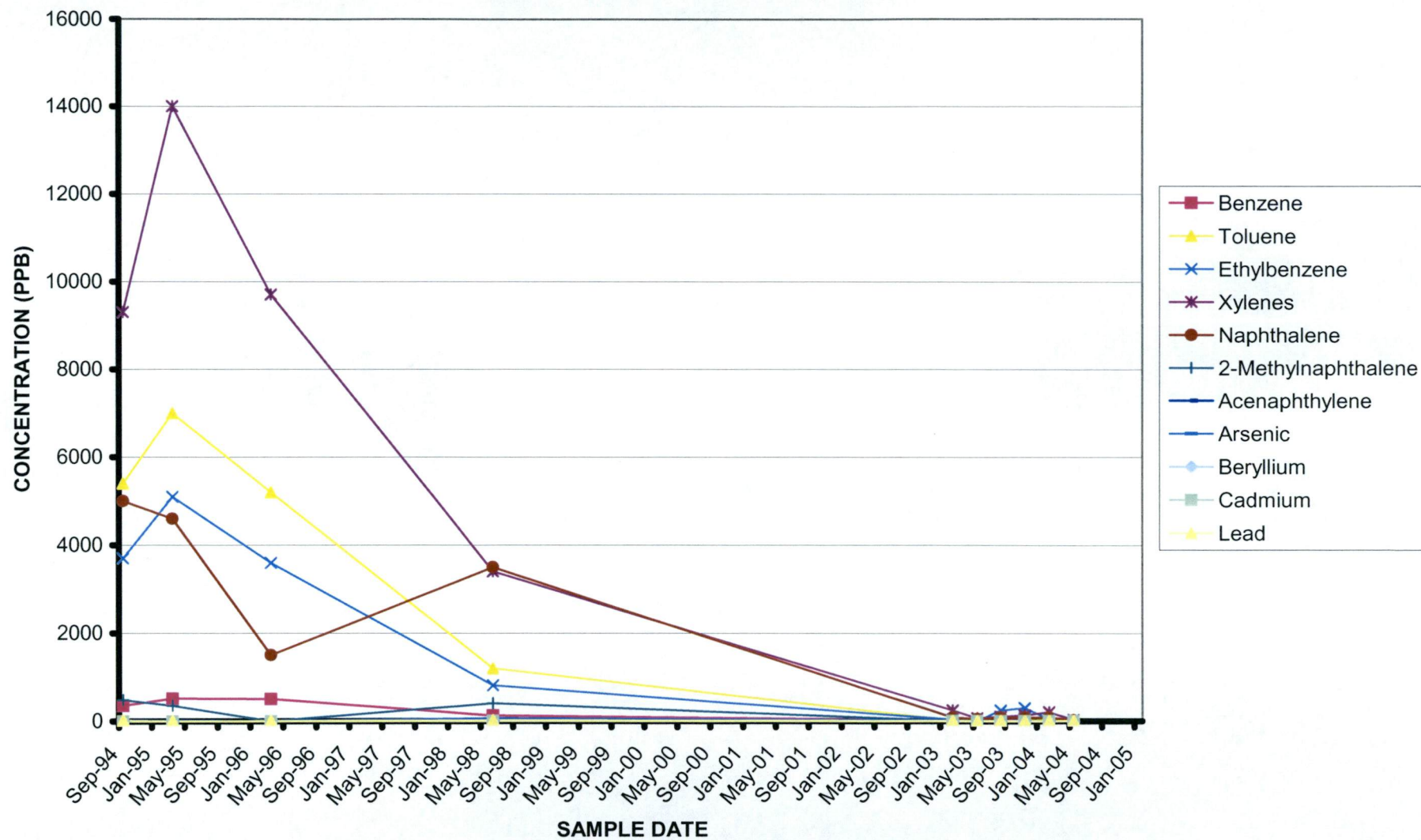


**FIGURE 2**  
**TREND ANALYSIS FOR WELL MW-2**



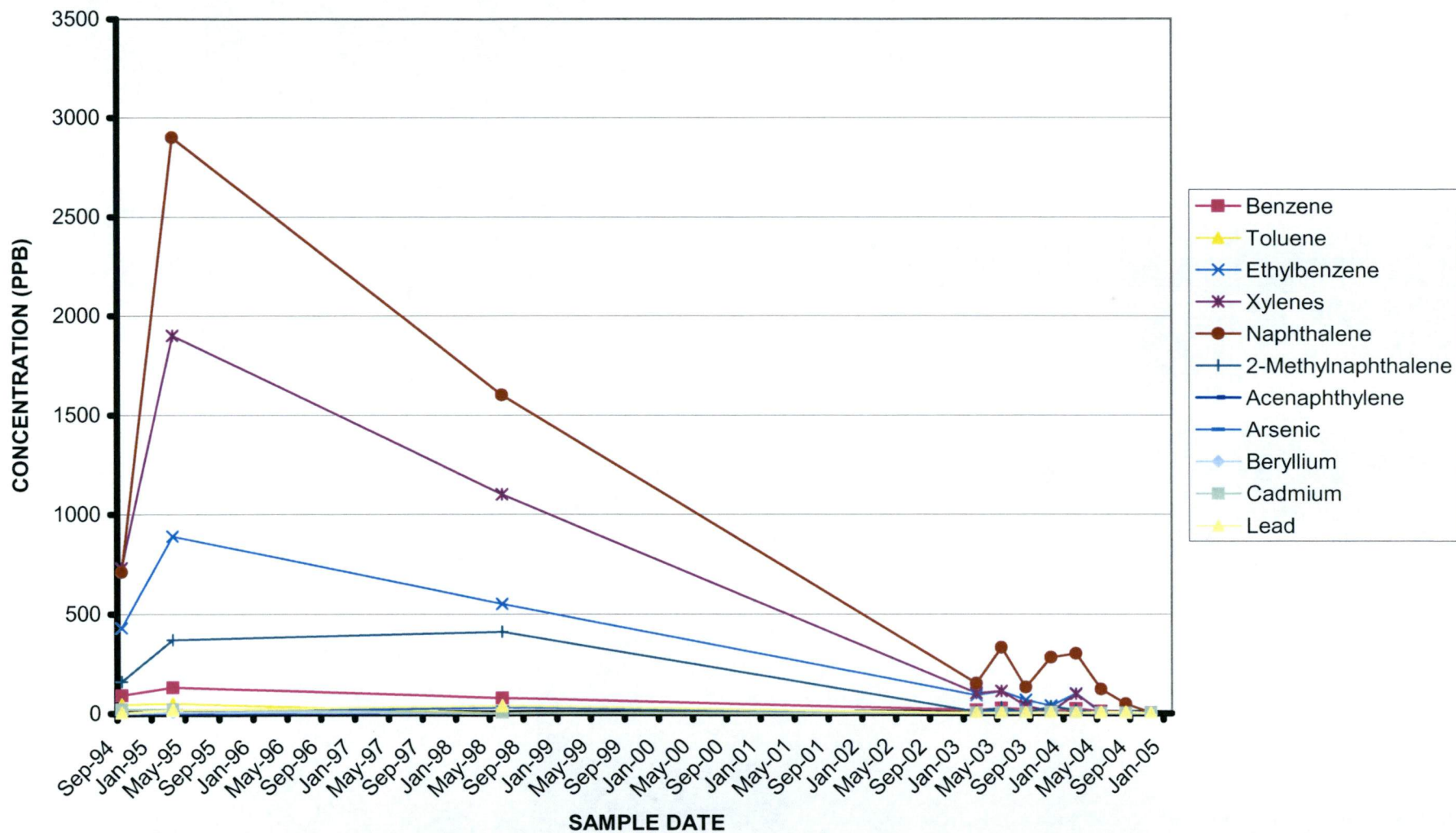


**FIGURE 3**  
**TREND ANALYSIS FOR WELL MW-3**

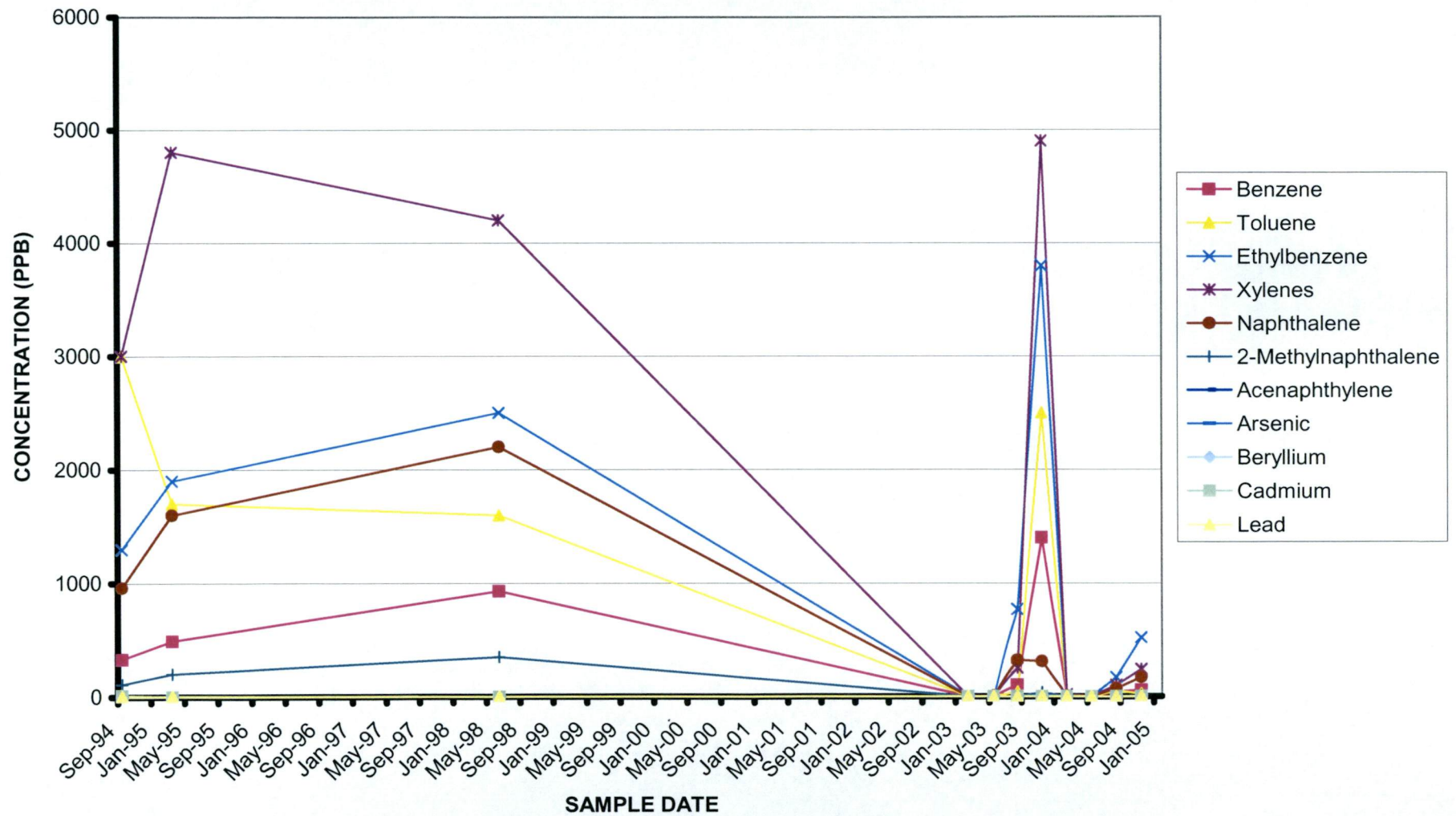




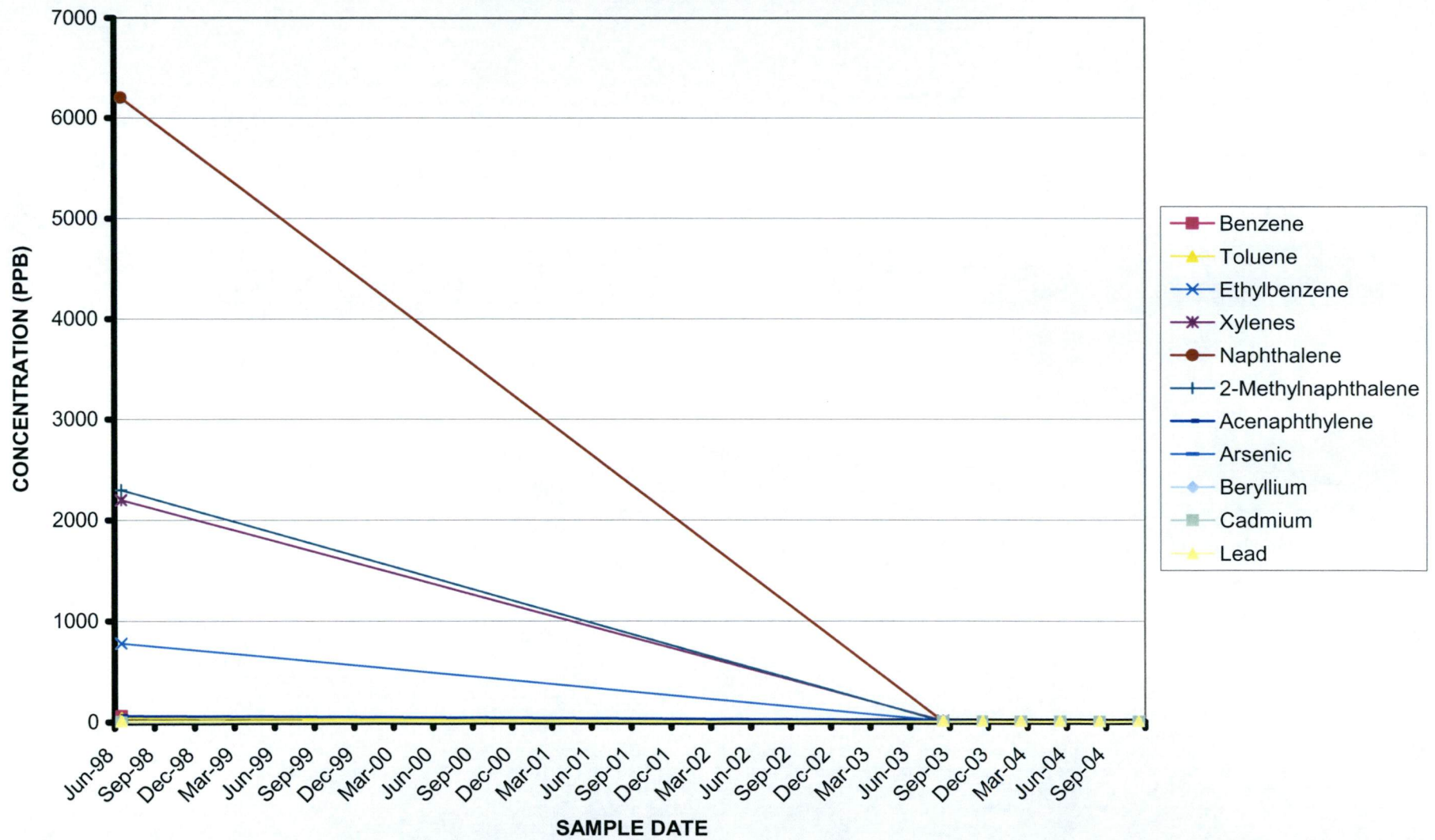
**FIGURE 4**  
**TREND ANALYSIS FOR WELL MW-4**



## TREND ANALYSIS FOR WELL MW-5



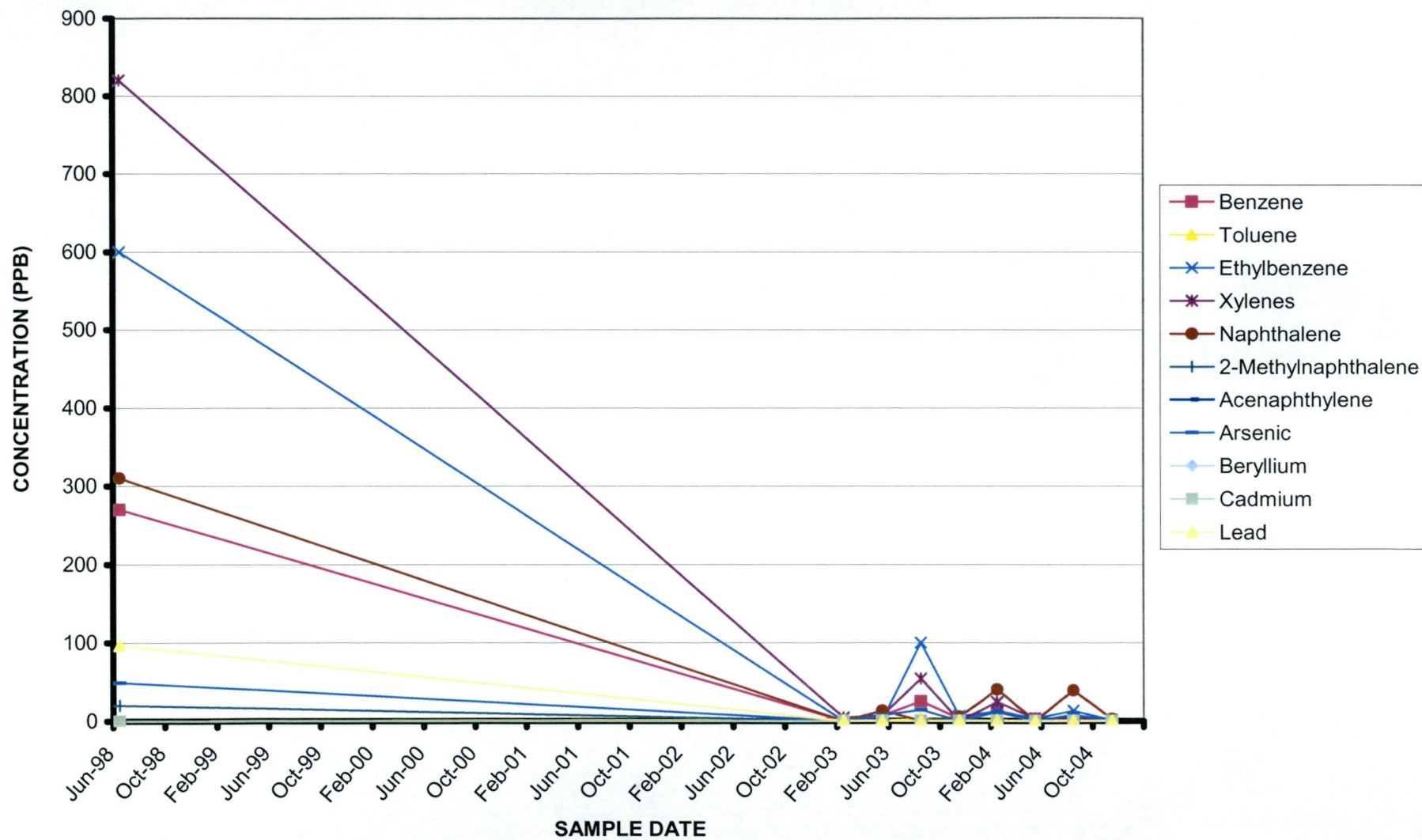
**FIGURE 6**  
**TREND ANALYSIS FOR WELL MW-9**



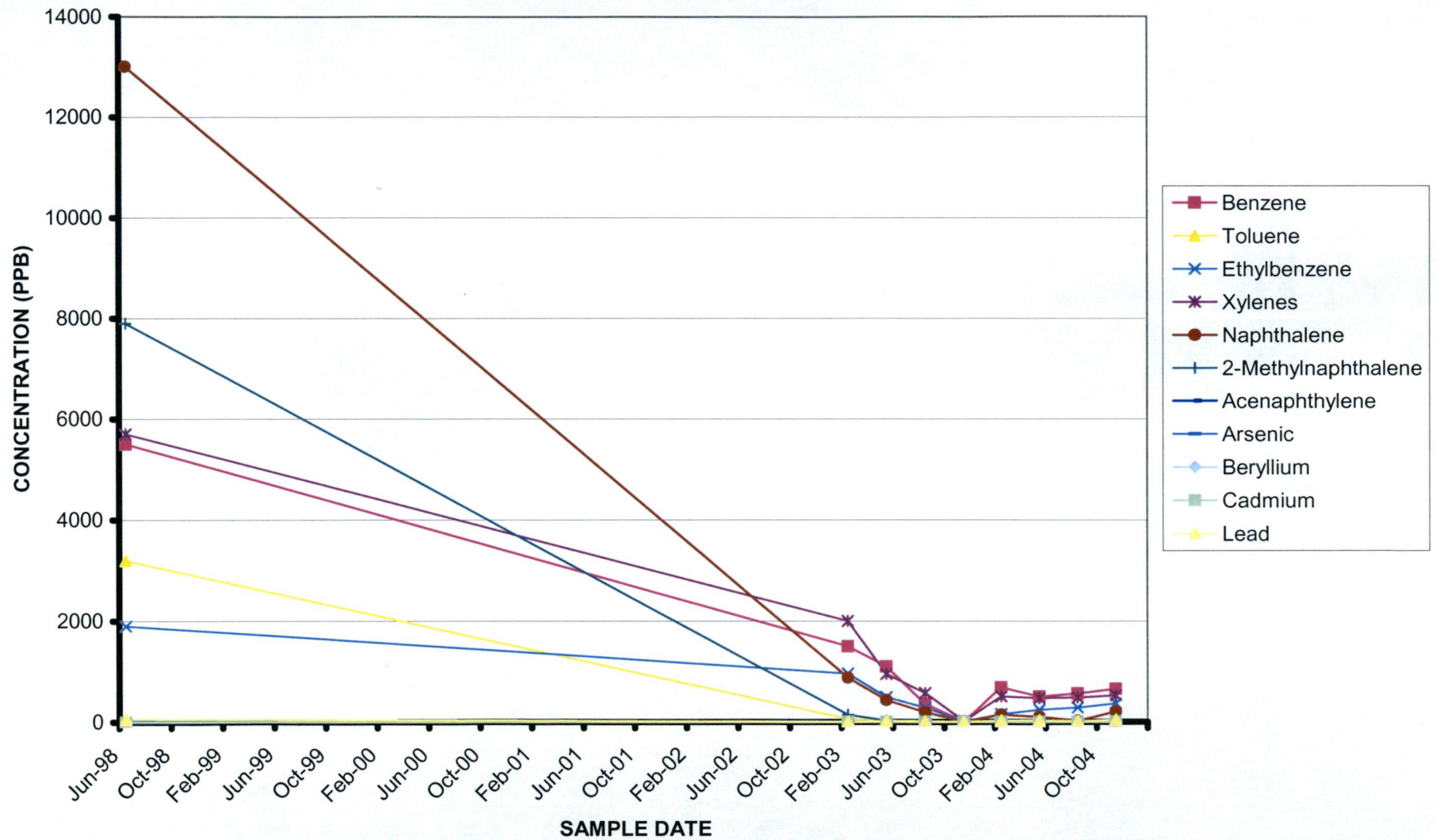


[illegible]

**FIGURE 8**  
**TREND ANALYSIS FOR WELL MW-12**

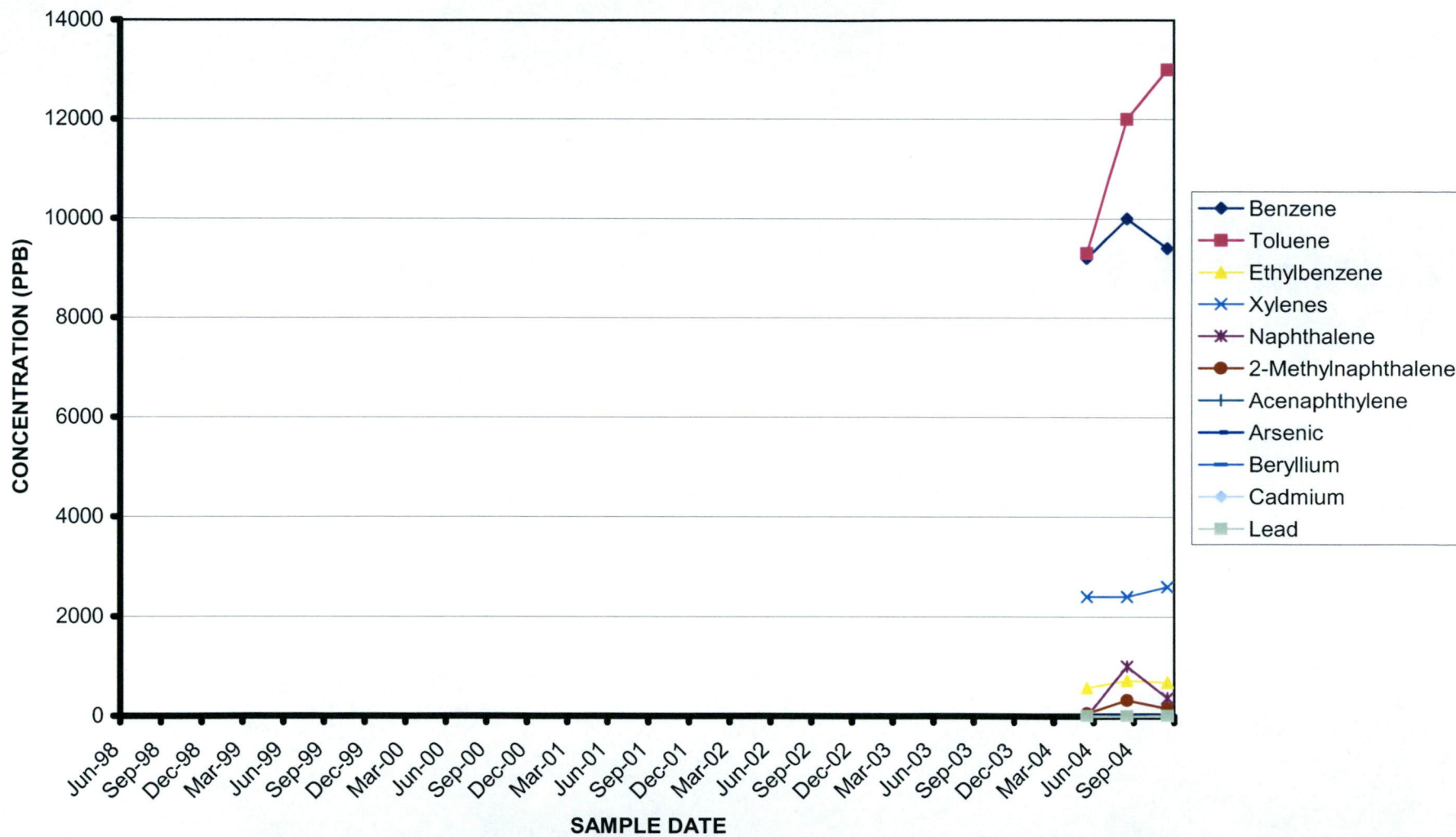


**FIGURE 9**  
**TREND ANALYSIS FOR WELL MW-13**

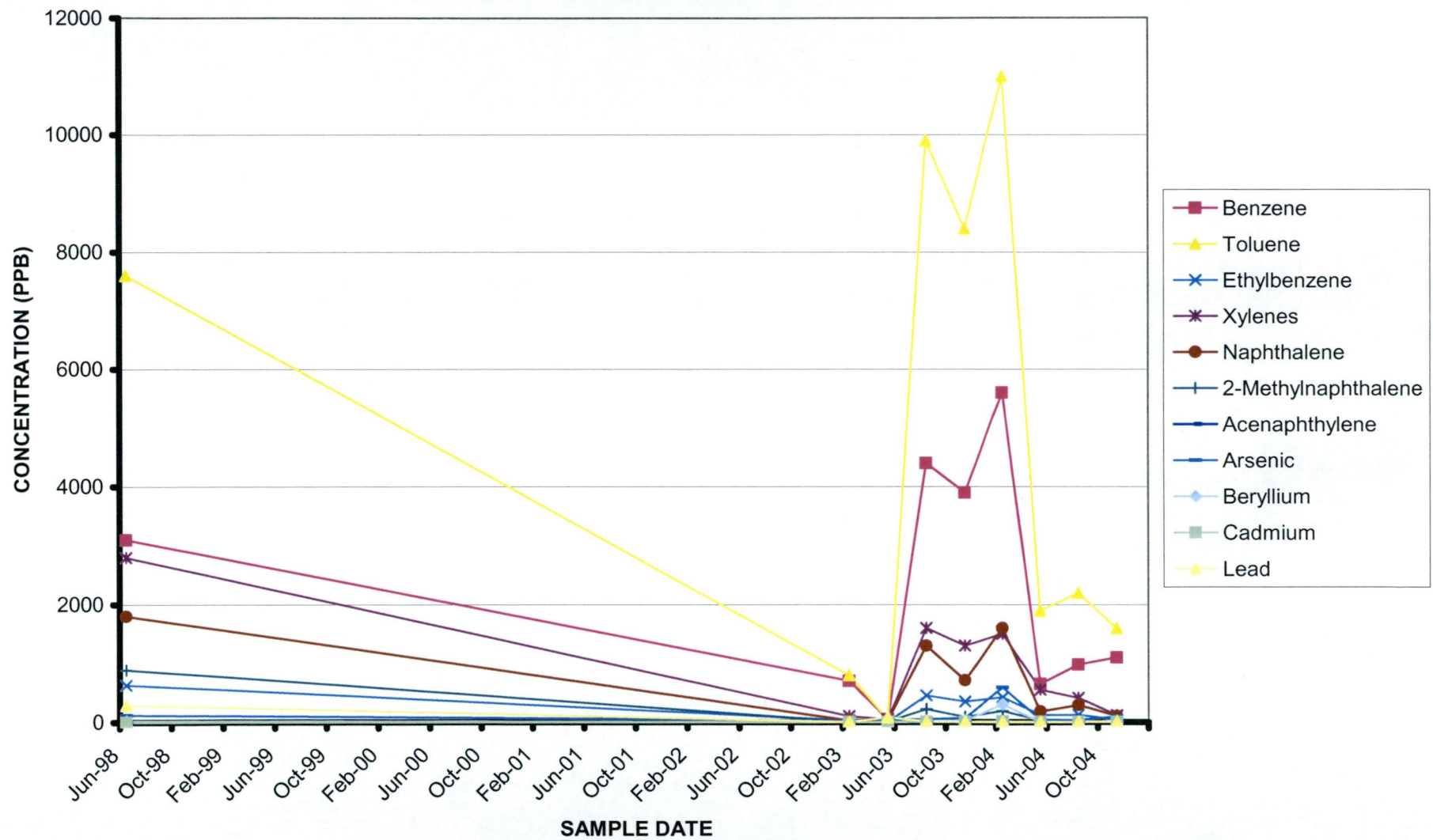




**FIGURE 10**  
**TREND ANALYSIS FOR WELL MW-14**



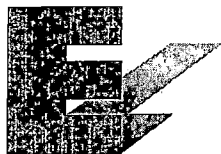
**FIGURE 11**  
**TREND ANALYSIS FOR WELL MW-15**





## **APPENDICES**

**Appendix A**  
**Analytical Reports and Field Data Sheets**

**ELAB of TENNESSEE**

Formerly Eckenfelder Laboratory

November 30, 2004

Mr. Mike Watkins  
Brown and Caldwell  
7550 Lucerne Dr., Suite 310  
Middleburg Heights, OH 44130-6503

RE: PECO-Quarterly GW

Work Order No.: 0411100, 121, 139

Dear Mr. Watkins:

ELAB of Tennessee, LLC received a combined 11 samples from 11/10/04 to 11/12/04 for the analyses presented in the following report.

Analyses are performed with method-required calibration and QA/QC samples whenever applicable. Method performance, which is based on the calibration and QA/QC samples, establishes the validity and certainty of the reported sample results. This data is provided along with the sample results when requested.

Thank you for this opportunity to be of service. If you have any questions regarding this data, please feel free to call me at (615) 345-1115, extension 249.

Sincerely,

Brian Richard,  
Project Manager  
ELAB of Tennessee, LLC  
227 French Landing Drive, Suite 550  
Nashville, TN 37228

**THIS DOCUMENT MEETS NELAC STANDARDS**  
**NELAC Certification #E87646**



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/19/04

ELAB SAMPLE NUMBER		V5BLK1116	V5BLK1117	0411100-01	0411100-02	0411100-03
DATE SAMPLED		NA	NA	11/09/04	11/09/04	11/09/04
DATE RECEIVED		NA	NA	11/10/04	11/10/04	11/10/04
DATE ANALYZED		11/16/04	11/17/04	11/16/04	11/16/04	11/16/04
CLIENT SAMPLE DESCRIPTION		M.BLANK	V5BLK1117	MW-2	MW-4	DUP110904
VOLATILE ORGANICS						
BY USEPA METHOD 8260	EQL	CONC	CONC	CONC	CONC	CONC
Benzene	1.0	< 1.0	< 1.0	5.4	2.8	51
Ethylbenzene	1.0	< 1.0	< 1.0	4.5	0.78 J	500 E
Toluene	1.0	< 1.0	< 1.0	0.46 J	< 1.0	22
Xylene(total)	1.0	< 1.0	< 1.0	1.3	1.4	250 E

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/19/04

ELAB SAMPLE NUMBER		0411100-03D	0411100-04	0411100-04D	0411100-05
DATE SAMPLED		11/09/04	11/09/04	11/09/04	11/09/04
DATE RECEIVED		11/10/04	11/10/04	11/10/04	11/10/04
DATE ANALYZED		11/17/04	11/16/04	11/17/04	11/16/04
CLIENT SAMPLE DESCRIPTION		DUP110904	MW-5	MW-5	Trip Blank #2973
VOLATILE ORGANICS BY USEPA METHOD 8260		5.0 X(1) EQL	CONC	5.0 X(1) CONC	CONC
Benzene	1.0	59 D	54	58 D	< 1.0
Ethylbenzene	1.0	510 D	440 E	520 D	< 1.0
Toluene	1.0	22 D	22	22 D	< 1.0
Xylene(total)	1.0	240 D	220 E	240 D	< 1.0

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.

DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.

Elab

D. Rick Davis  
Vice President





**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER	SBLK1111B1	0411100-01	0411100-02	0411100-03	0411100-03D
DATE SAMPLED	NA	11/09/04	11/09/04	11/09/04	11/09/04
DATE RECEIVED	NA	11/10/04	11/10/04	11/10/04	11/10/04
DATE ANALYZED	11/16/04	11/16/04	11/16/04	11/16/04	11/17/04
CLIENT SAMPLE DESCRIPTION	M.BLANK	MW-2	MW-4	DUP110904	DUP110904
BASE NEUTRAL ORGANICS BY USEPA METHOD 8270	EQL	CONC	CONC	CONC	2.0 X(1) CONC
Acenaphthylene	5.0	< 5.0	< 5.4	< 5.6	1.1 J 1.2 JD
2-Methylnaphthalene	5.0	< 5.0	< 5.4	< 5.6	6.5 < 11 D
Naphthalene	5.0	< 5.0	< 5.4	2.2 J 120 E	160 D

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.

DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER	0411100-04		0411100-04D	
DATE SAMPLED	11/09/04		11/09/04	
DATE RECEIVED	11/10/04		11/10/04	
DATE ANALYZED	11/17/04		11/17/04	
CLIENT SAMPLE DESCRIPTION	MW-5		MW-5	
BASE NEUTRAL ORGANICS			2.0 X(1)	
BY USEPA METHOD 8270	EQL	CONC	CONC	
Acenaphthylene	5.0	1.3	J	1.3 JD
2-Methylnaphthalene	5.0	7.8		7.9 JD
Naphthalene	5.0	130	E	170 D

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.  
DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.

Elab

D. Rick Davis  
Vice President



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001

Date Reported: 11/22/04

ELAB SAMPLE NUMBER	V3BLK1117	0411121-01	0411121-02D	0411121-03D	0411121-04
DATE SAMPLED	NA	11/10/04	11/10/04	11/10/04	11/10/04
DATE RECEIVED	NA	11/11/04	11/11/04	11/11/04	11/11/04
DATE ANALYZED	11/17/04	11/17/04	11/17/04	11/17/04	11/17/04
CLIENT SAMPLE DESCRIPTION	M.BLANK	MW-12	MW-13	MW-14	Trip Blank #2974
VOLATILE ORGANICS BY USEPA METHOD 8260	EQL	CONC	CONC	10 X(1) CONC	100 X(1) CONC
Benzene	1.0	< 1.0	1.1	650 D	9400 D
Ethylbenzene	1.0	< 1.0	0.69 J	360 D	680 D
Toluene	1.0	< 1.0	< 1.0	26 D	13000 D
Xylene(total)	1.0	< 1.0	0.27 J	520 D	2600 D

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

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(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.

DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.

Elab

D. Rick Davis  
Vice President





**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001

Date Reported: 11/23/04

ELAB SAMPLE NUMBER	SBLK1112B1	0411121-01	0411121-02	0411121-02D	0411121-03
DATE SAMPLED	NA	11/10/04	11/10/04	11/10/04	11/10/04
DATE RECEIVED	NA	11/11/04	11/11/04	11/11/04	11/11/04
DATE ANALYZED	11/12/04	11/13/04	11/13/04	11/17/04	11/13/04
CLIENT SAMPLE DESCRIPTION	M.BLANK	MW-12	MW-13	MW-13	MW-14
BASE NEUTRAL ORGANICS BY USEPA METHOD 8270	EQL	CONC	CONC	CONC	CONC
Acenaphthylene	5.0	< 5.0	< 5.4	< 5.3	< 10 D
2-Methylnaphthalene	5.0	< 5.0	< 5.4	43	48 D
Naphthalene	5.0	< 5.0	2.2 J	150 E	200 D

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.

DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER		0411121-03D	
DATE SAMPLED		11/10/04	
DATE RECEIVED		11/11/04	
DATE ANALYZED		11/17/04	
CLIENT SAMPLE DESCRIPTION		MW-14	
BASE NEUTRAL ORGANICS		5.0 X(1)	
BY USEPA METHOD 8270		EQL	CONC
Acenaphthylene	5.0	< 26	D
2-Methylnaphthalene	5.0	150	D
Naphthalene	5.0	360	D

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.

DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.

Elab

*D. Rick Davis*

D. Rick Davis  
Vice President



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER		V3BLK1117	0411139-01	0411139-02	0411139-03D	0411139-04
DATE SAMPLED		NA	11/11/04	11/11/04	11/11/04	11/11/04
DATE RECEIVED		NA	11/12/04	11/12/04	11/12/04	11/12/04
DATE ANALYZED		11/17/04	11/17/04	11/17/04	11/17/04	11/17/04
CLIENT SAMPLE DESCRIPTION		M.BLANK	Trip Blank #2975	MW-11	MW-15	EB111104
VOLATILE ORGANICS BY USEPA METHOD 8260		EQL	CONC	CONC	CONC	CONC
Benzene		1.0	< 1.0	< 1.0	1100 D	< 1.0
Ethylbenzene		1.0	< 1.0	< 1.0	34 D	< 1.0
Toluene		1.0	< 1.0	< 1.0	1600 D	< 1.0
Xylene (total)		1.0	< 1.0	< 1.0	110 D	< 1.0

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED.  
DETECTION LIMITS HAVE BEEN INCREASED BY THE SAME FACTOR.





**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: BROWN & CALDWELL-Mid12-NOV-2004 09:00  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER		0411139-05	
DATE SAMPLED		11/11/04	
DATE RECEIVED		11/12/04	
DATE ANALYZED		11/17/04	
CLIENT SAMPLE DESCRIPTION		MW-9	
VOLATILE ORGANICS			
BY USEPA METHOD 8260	EQL	CONC	
Benzene	1.0	< 1.0	
Ethylbenzene	1.0	< 1.0	
Toluene	1.0	< 1.0	
Xylene(total)	1.0	< 1.0	

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

Elab

D. Rick Davis  
Vice President



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

Client: PECO #23867.001  
Date Reported: 11/23/04

ELAB SAMPLE NUMBER		SBLK1115B1	0411139-02	0411139-03	0411139-04	0411139-05
DATE SAMPLED		NA	11/11/04	11/11/04	11/11/04	11/11/04
DATE RECEIVED		NA	11/12/04	11/12/04	11/12/04	11/12/04
DATE ANALYZED		11/17/04	11/17/04	11/18/04	11/18/04	11/18/04
CLIENT SAMPLE DESCRIPTION		M.BLANK	MW-11	MW-15	EB111104	MW-9
BASE NEUTRAL ORGANICS BY USEPA METHOD 8270		EQL	CONC	CONC	CONC	CONC
Acenaphthylene	5.0	< 5.0	< 5.3	< 5.3	< 5.4	< 5.3
2-Methylnaphthalene	5.0	< 5.0	< 5.3	< 5.3	< 5.4	< 5.3
Naphthalene	5.0	< 5.0	< 5.3	100	< 5.4	< 5.3

ALL COMPOUNDS EXPRESSED IN MICROGRAMS/LITER UNLESS OTHERWISE NOTED.

ALL NON-DETECT VALUES ARE REPORTED AS <EQL (MODIFIED TO REFLECT DILUTIONS/SAMPLE VOLUME).

SEE ATTACHED PAGE FOR DEFINITIONS OF TERMS AND QUALIFIERS.

Elab

D. Rick Davis  
Vice President



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

## ANALYTICAL REPORT TERMS AND QUALIFIERS

- EQL:** The estimated quantitation limit (EQL) is defined as the estimated concentration above which quantitative results can be obtained with a specific degree of confidence. ELAB defines the EQL to be at or near the lowest calibration standard.
- B:** The presence of a "B" to the right of an analytical value indicates that this compound was also detected in the method blank and the data should be interpreted with caution. One should consider the possibility that the most accurate sample result might be less than the reported value and, perhaps, zero. The qualifier will be placed on the analyte according to "National Functional Guidelines." The 10x rule will be applied.
- D:** When a sample (or sample extract) is rerun diluted because one of the compound concentrations exceeded the highest concentration range for the standard curve, all of the values obtained in the dilution run will be flagged with a "D".
- E:** The concentration for any compound found which exceeds the highest concentration level on the standard curve for that compound will be flagged with an "E". Usually the sample will be rerun at a dilution to quantitate the flagged compound.
- J:** The presence of a "J" to the right of an analytical result indicates that the reported result is estimated. The chromatographic data pass the identification criteria showing that the compound is present, but the calculated result is less than the EQL.
- P:** The associated numerical value is an estimated quantity. There is greater than a 40% difference between the two GC columns for the detected concentrations. The higher of the two values is reported.





**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

**CLIENT: B&C-PECO Quarterly GW #23867.001**

**DATE RECEIVED: 11/10/04**

**DATE REPORTED: 11/19/04**

ELAB SAMPLE NUMBER				0411100-01	0411100-02	0411100-03	0411100-04
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				MW-2 11/9/04 10:35:00 AM	MW-4 11/9/04 11:35:00 AM	DUP110904 11/9/04	MW-5 11/9/04 12:45:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC	CONC
Arsenic	5.0	6010B	µg/L	9.9	<5.0	<5.0	5.3
Beryllium	5.0	6010B	µg/L	<5.0	<5.0	<5.0	<5.0
Cadmium	1.0	6010B	µg/L	<1.0	1.6	<1.0	<1.0
Lead	3.0	6010B	µg/L	8.7	<3.0	<3.0	<3.0

See attached page for definition of terms and qualifiers.

ELAB

D. Rick Davis  
Vice President



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

**CLIENT: PECO #23867.001**

**DATE RECEIVED: 11/11/04**

**DATE REPORTED: 11/23/04**

ELAB SAMPLE NUMBER				0411121-01	0411121-02	0411121-03
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				MW-12 11/10/04 10:45:00 AM	MW-13 11/10/04 11:59:00 AM	MW-14 11/10/04 1:10:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC
Arsenic	5.0	6010B	µg/L	<5.0	6.0	22
Beryllium	5.0	6010B	µg/L	<5.0	<5.0	<5.0
Cadmium	1.0	6010B	µg/L	<1.0	<1.0	<1.0
Lead	3.0	6010B	µg/L	<3.0	37	3.3

See attached page for definitions of terms and qualifiers.

**ELAB**

**D. Rick Davis**  
**Vice President**



**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

**CLIENT: PECO #23867.001**

**DATE RECEIVED: 11/12/04**

**DATE REPORTED: 11/29/04**

ELAB SAMPLE NUMBER				0411139-02	0411139-03	0411139-04	0411139-05
CLIENT SAMPLE DESCRIPTION/SAMPLING DATE				MW-11 11/11/04 10:15:00 AM	MW-15 11/11/04 11:45:00 AM	EB111104 11/11/04 12:05:00 PM	MW-9 11/11/04 12:50:00 PM
ANALYTES	REPORTING LIMITS	USEPA METHOD	UNITS	CONC	CONC	CONC	CONC
Arsenic	5.0	6010B	µg/L	<5.0	90	<5.0	<5.0
Beryllium	5.0	6010B	µg/L	<5.0	16	<5.0	<5.0
Cadmium	1.0	6010B	µg/L	<1.0	<1.0	<1.0	<1.0
Lead	3.0	6010B	µg/L	<3.0	<3.0	<3.0	<3.0

See attached page for definition of terms and qualifiers.

**ELAB**

**D. Rick Davis**  
**Vice President**





**ELAB of TENNESSEE**  
Formerly Eckenfelder Laboratory

## **ANALYTICAL REPORT NOTES, TERMS AND QUALIFIERS (INORGANIC)**

### **Notes:**

The metals and cyanide reporting limits (RLs) have been statistically determined to be no less than three standard deviations as defined in 40 CFR 136, Appendix B, Revision 1.11. All other reporting limits are referenced from the specific analytical method.

### **Terms:**

NA Not Applicable

NR Not Requested

### **Qualifiers:**

B The reported value is less than the practical quantitation limit (PQL, project defined) but greater than or equal to the RL.

E The reported value is estimated due to the presence of matrix interference.

N Predigested spike recovery not within control limits.

\* RPD or absolute difference for Duplicate analysis not within control limits.

\*\* Reference Standard Methods 19th edition.

(1) pH analyzed outside USEPA specified holding time. pH must be measured immediately after sample collection.

(2) The sample pH did not meet the preservation guidelines. Therefore the pH was adjusted upon receipt.

(3) Reference Standard Methods 17th edition for the distillation method.

(4) The sample was analyzed out of the USEPA holding time.

(5) The sample was received in the laboratory out of the USEPA holding time.

(6) The shipping cooler temperature exceeded 6°C upon receipt to ELAB of Tennessee, LLC.

(7) Analysis was subcontracted

Nº 32224

### Details:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order \_\_\_\_\_  
E-mail \_\_\_\_\_

Page 1 of 1  
Cooler No. 1 of 1  
Date Shipped 11/9/04  
Shipped By Fed Ex

Turnaround STANDARD  
(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

[illegible]

Nº 32223

### Details:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order \_\_\_\_\_  
E-mail \_\_\_\_\_

Turnaround STANDARD  
(Std. Turn unless noted otherwise / There  
may be a surcharge for RUSH-contact lab)

[illegible]



Nº 32225

### Details:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order \_\_\_\_\_  
E-mail \_\_\_\_\_

Page 1 of 1  
Cooler No. 1 of 2  
Date Shipped 11/1/84  
Shipped By FedEx

Turnaround STANDARD  
(Std. Turn unless noted otherwise / There  
may be a surcharge for RUSH-contact lab

[illegible]



110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-2  
Sample I.D.(s): MW-2 (if different from well no.)

Project: 23867.008  
Personnel: MPC, JLM

Date: 11/9/04 Time: 0945  
Weather: SUNNY Air Temp.: 10W 50's

### WELL DATA:

Casing Diameter: 4 in. Casing Material: Stainless Steel  
Intake Diameter: 4 in. Intake Material: NA  
DEPTH TO: Static Water Level: 9.70 ft Bottom of Well: 13.31 ft Screen Length: 10 ft  
DATUM: ☒ Top of Protective Casing ☒ Top of Well Casing ☐ Other: NA  
CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☐ Yes ☒ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☐ Yes ☐ No NA  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type Peri Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☒ No  
Tubing: Material: Polyn Inner Diameter: 3/8 in.  
Distance from well to flow cell: 2 ft  
Purge Depth: 11 ft. Avg. Pumping Rate: 90 mL/min Elapsed Time: 30 min Volume Pumped: 0.65 gal  
Was well evacuated? ☐ Yes ☐ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type Peristaltic Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☒ No  
Tubing: Material: Polyn Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 11 ft. Sampling Pumping Rate: 90 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: NA Filter Size: NA  
Appearance: ☒ Clear ☐ Turbid ☐ Color: NA ☐ Contains Immiscible Liquid  
Field Determinations: pH: 8.00 Temp: 12.00 °C ORP: -46 mV Cond: 128 µS/cm  
DO: 0.9 Turbidity: 00.7 NTU  
Meter Model: Hanna U-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: NA  
MS/MSD ☐ Yes ☒ No MS/MSD ID: NA  
Field Blank ID: 2973 MPC (if applicable)  
Trip Blank ID: 2973  
Hach Kit Results: Fe: NA Mn: NA S: NA CO<sub>2</sub>: NA  
Cl: NA  
Laboratory Analysis: VOC, SVOC, Metals (As, Cd, Cr, Cu, Pb, Fe, Ni, Se, Zn)  
No. of Containers: 6 Sample Time: 1035

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/9/04

## LOW-FLOW GROUNDWATER FIELD DATA SHEET

**Project Name:** \_\_\_\_\_

Project Number: 236.07.0028

Personnel: MPC, JLM

Well ID: MW-7

Purge/Sample Depth: 18' 11'

Sample ID: HW-2

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12400

[illegible]





110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-4  
Sample I.D.(s): MW-4 (if different from well no.)

Project: D367 PECO  
Personnel: MPCL/ILM

Date: 11/9/04 Time: 11:00  
Weather: Sunny Air Temp.: 62.5°F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: Stainless Steel  
Intake Diameter: 4 in. Intake Material: ''  
DEPTH TO: Static Water Level: 8.95 ft Bottom of Well: 14.59 ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☐ Yes ☒ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☐ Yes ☒ No NA  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type Peristaltic Manufacturer: Colson Model Number: 03647  
Cooling Shroud? ☐ Yes ☒ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: 2 ft  
Purge Depth: 3.2 ft Avg. Pumping Rate: 110 mL/min Elapsed Time: 30 min Volume Pumped: 39 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type Peristaltic Manufacturer: Colson Model Number: 03647  
Cooling Shroud? ☐ Yes ☒ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 6.5 ft Sampling Pumping Rate: 110 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 7.38 Temp: 13.42 °C ORP: 23 mV Cond: 1479  $\mu\text{S}/\text{cm}$   
DO: 2.39 Turbidity: 54.7 NTU  
Meter Model: Haniba U-22 Meter S/N: \_\_\_\_\_  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: NA  
MS/MSD ☐ Yes ☒ No MS/MSD ID: NA  
Field Blank ID: NA (if applicable)  
Trip Blank ID: 92-2973  
Hach Kit Results: Fe: NA Mn: NA S: NA CO<sub>2</sub>: NA  
Cl: NA  
Laboratory Analysis: VOC, SVOC, Metals (Pb, Be, Cd, As)  
No. of Containers: 6 Sample Time: 11:32

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/9/04

## LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PECO

Project Number: 23867

Personnel: MPL/JLM

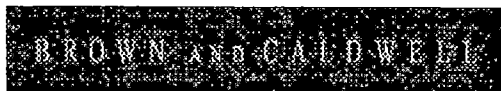
Well ID: MW-4

Purge/Sample Depth: 12

Sample ID: MW-4

8:25 4:45 + 11:00 MPC

[illegible]



110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-5  
Sample I.D.(s): MW-5 (if different from well no.)

Project: PELO 23867  
Personnel: MPL/JLM

Date: 11-9-04 Time: 12:00  
Weather: \_\_\_\_\_ Air Temp.: 40.5 F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: Stainless Steel  
Intake Diameter: 4 in. Intake Material: Stainless Steel  
DEPTH TO : Static Water Level: 8.98 ft Bottom of Well: 15.10 ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☒ No a/most buried  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☐ Yes ☒ No NA  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type Perc Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: 3 ft  
Purge Depth: 13 ft. Avg. Pumping Rate: 302 mL/min Elapsed Time: 30 min Volume Pumped: 95 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type Perc Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 13 ft. Sampling Pumping Rate: \_\_\_\_\_ mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 7.47 Temp: 13.45 °C ORP: -44 mV Cond: 0.320 mS/cm  
DO: 2.14 Turbidity: 131 NTU  
Meter Model: Hanna U-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☒ Yes ☐ No Duplicate ID: DUP-110904  
MS/MSD ☐ Yes ☒ No MS/MSD ID: NA  
Field Blank ID: NA (if applicable)  
Trip Blank ID: 2973  
Hach Kit Results: Fe: NA Mn: NA S: NA CO<sub>2</sub>: NA  
Cl: NA  
Laboratory Analysis: VOC, SVOC, Metals (As, Cd, Be, Pb)  
No. of Containers: 6 Sample Time: 12:45

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/9/04

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PELCO

Project Number: 23867

Personnel: MPL/JAM

Well ID: MW-3

Purge/Sample Depth:

Sample ID: 14W-5

6/14 12<sup>04</sup>

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110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-9  
Sample I.D.(s): \_\_\_\_\_ (if different from well no.)

Project: Peco Quarterly GWS  
Personnel: CRAG, SLM

Date: 11/11/04 Time: 12:00  
Weather: Partly Sunny Air Temp.: 54°F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: PVC  
Intake Diameter: 6 in. Intake Material: \_\_\_\_\_  
DEPTH TO: Static Water Level: 11.06 ft Bottom of Well: 16.81 ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Other: \_\_\_\_\_  
CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type Perist Manufacturer: Solinist Model Number: \_\_\_\_\_  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: \_\_\_\_\_ ft  
Purge Depth: 148 ft. Avg. Pumping Rate: 160 mL/min Elapsed Time: 36 min Volume Pumped: 1.5 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type PERISTALTIC Manufacturer: Solinist Model Number: \_\_\_\_\_  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 14.90 ft. Sampling Pumping Rate: 160 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 8.3 Temp: 16.5 °C ORP: -31 mV Cond: 0.547  
DO: 1.42 Turbidity: 43.8 NTU  
Meter Model: HORIBA U-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: N/A  
MS/MSD ☐ Yes ☒ No MS/MSD ID: \_\_\_\_\_  
Field Blank ID: KB-111104 (if applicable)  
Trip Blank ID: 2975  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A

Laboratory Analysis: VOL, SUDC, METALS, (As, Cd, Pb, Be)  
No. of Containers: 12 Sample Time: 12:50

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/11/04

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PECO Quarterly GWS

Personnel: RAA, JLM

Purge/Sample Depth: \_\_\_\_\_

Project Number: 23867.008

Well ID: MW-9

Sample ID: MW-9

[illegible]



110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-11  
Sample I.D.(s): \_\_\_\_\_ (if different from well no.)

Project: PRCO Quarterly GWS  
Personnel: RAG, JLM

Date: 11/11/04 Time: 09:30  
Weather: Partly Sunny Air Temp.: 47 °F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: STAINLESS STEEL  
Intake Diameter: 6 in. Intake Material: CARB STEEL  
DEPTH TO: Static Water Level: 13.31 ft Bottom of Well: 16.81 ft Screen Length: 10 ft  
DATUM: ☒ Top of Protective Casing ☐ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type PERISTALTIC Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: 2.5 ft  
Purge Depth: 14.5 ft. Avg. Pumping Rate: 160 mL/min Elapsed Time: 30 min Volume Pumped: 1.27 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type PERISTALTIC Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 14.5 ft. Sampling Pumping Rate: 160 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 8.69 Temp: 15.24 °C ORP: -119 mV Cond: 1.03  
DO: 8 Turbidity: 81.5 NTU  
Meter Model: HANNA 4-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: N/A  
MS/MSD ☒ Yes ☐ No MS/MSD ID: MW-11  
Field Blank ID: N/A (if applicable)  
Trip Blank ID: 2975  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A  
Laboratory Analysis: VOC, SVOC, METALS, (AS, Cd, Be, Pb)  
No. of Containers: 18 Sample Time: 10:15

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/11/04

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PRCO QUARTERLY GWS

Personnel: RAG, JLM

Purge/Sample Depth: 14.50

Project Number: 23867-008

Well ID: HW-11

Sample ID: MW-11

[illegible]





110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-12  
Sample I.D.(s): \_\_\_\_\_ (if different from well no.)

Project: PECO QUARTERLY GW  
Personnel: RAG, SLM

Date: 11-10-04 Time: 10:05  
Weather: Sunny Air Temp.: 55°F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: STEEL  
Intake Diameter: 6 in. Intake Material: STEEL  
DEPTH TO: Static Water Level: 11.90 ft Bottom of Well: \_\_\_\_\_ ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type Peristaltic Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Polyethylene Inner Diameter: 3/8 in.  
Distance from well to flow cell: 3 ft  
Purge Depth: 16.7 ft. Avg. Pumping Rate: 160 mL/min Elapsed Time: 33 min Volume Pumped: 1.4 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type Peristaltic Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☒ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 14.00 ft. Sampling Pumping Rate: 160 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 8.16 Temp: 17.01 °C ORP: -43 mV Cond: 0.478  
DO: 1.08 Turbidity: 1.8 NTU  
Meter Model: Hanvee 4-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: N/A  
MS/MSD ☐ Yes ☒ No MS/MSD ID: N/A  
Field Blank ID: N/A (if applicable)  
Trip Blank ID: N/A 2974  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A  
Laboratory Analysis: DOC, SVOC, METALS (As, Cd, Be, Pb)  
No. of Containers: 6 Sample Time: 10:45

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: \_\_\_\_\_ Date: 11-10-04

## LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PECO QUARTERLY  
Personnel: TRAG, JLM  
Purge/Sample Depth: 14.00

Project Number: \_\_\_\_\_  
Well ID: MW-12  
Sample ID: MW-12

[illegible]



110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-13  
Sample I.D.(s): 11/10/2004 (in duplicate from well no.)

Project: PROD QUARTERLY GWS  
Personnel: RAG, SLAY

Date: 11/10/2004 Time: 11:05  
Weather: Sunny Air Temp.: 58 °F

### WELL DATA:

Casing Diameter: 4" in. Casing Material: STAINLESS  
Intake Diameter: 6" in. Intake Material: CS STEEL  
DEPTH TO: Static Water Level: 11.01 ft Bottom of Well: 15.86 ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☒ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type PERI Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: 2.5 ft  
Purge Depth: 13.80 ft Avg. Pumping Rate: 100 mL/min Elapsed Time: 21 min Volume Pumped: 4200 mL  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type Peri Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 13.80 ft Sampling Pumping Rate: 100 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: N/A Filter Size: N/A  
Appearance: ☐ Clear ☐ Turbid ☒ Color: GREAT ☐ Contains Immiscible Liquid  
Field Determinations: pH: 7.35 Temp: 15.28 °C ORP: -63 mV Cond: 0.563 mS/cm  
DO: 0.40 mg/L Turbidity: 270 NTU  
Meter Model: HANNA, U-22 Meter S/N: #03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: N/A  
MS/MSD ☐ Yes ☒ No MS/MSD ID: N/A  
Field Blank ID: N/A (if applicable)  
Trip Blank ID: BIANNA 2979  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A  
Laboratory Analysis: VOC, SVOC, METAL (AS, Cd, Be, Pb)  
No. of Containers: 6 Sample Time: 11:59

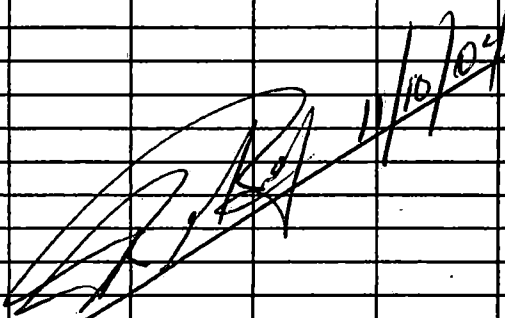
This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/10/2004

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PKCO Quarterly GWS Project Number: MW 23867.008  
 Personnel: RAG, SLM Well ID: MW-13  
 Purge/Sample Depth: 13-80 11.01/11.11 Sample ID: MW-13

Actual Time	pH	Temp (°C)	ORP (mV)	Cond (µS/cm)	DO (mg/L)	Turbidity (NTU)	DTW (ft)	Pumping Rate (mL/min)	Comments
11:12	7.83	16.09	-60	0.522	1.30	525	11.01	100 mL	
15	7.65	15.30	-63	.527	.82	527	11.11		
18	7.57	15.28	-61	.525	.72	529	11.11		
21	7.56	15.69	-61	.525	0.57	521	11.11		
24	7.57	15.81	-62	.525	0.14	512			
27	7.45	15.63	-62	.531	0.29	446	11.11		ODOR
30	7.44	15.53	-63	.533	0.00	460			DETECTED
33	7.40	15.56	-65	.536	0.15	424	11.11		
36	7.43	15.54	-65	.536	0.09	419			
39	7.45	15.43	-66	.562	1.74	329	11.11		
42	7.38	15.34	-64	.563	.83	307			
45	7.36	15.30	-63	.562	0.53	296	11.11		
47	7.34	15.27	-63	.563	0.46	297	11.11		
50	7.34	15.29	-63	.563	0.41	278			
53	7.35	15.28	-63	.563	0.40	270	11.11		
									
								Sample Time 11:59	





110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-121  
Sample I.D.(s): 23867.008 (different from well no.)

Project: PECO Quarterly GWS  
Personnel: RAG, JLM

Date: 11/10/2004 Time: \_\_\_\_\_  
Weather: Sunny Air Temp.: 58 °C

### WELL DATA:

Casing Diameter: 4 in. Casing Material: STAINLESS  
Intake Diameter: 6 in. Intake Material: CAS Iron  
DEPTH TO: Static Water Level: 5.71 ft Bottom of Well: 15.5 ft Screen Length: 10 ft  
DATUM: ☐ Top of Protective Casing ☐ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type PERI Manufacturer: Schmitz Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: 3 ft  
Purge Depth: 13.00 ft. Avg. Pumping Rate: 60 mL/min Elapsed Time: 30 min Volume Pumped: 0.95 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type PERI Manufacturer: Schmitz Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 13.00 ft. Sampling Pumping Rate: 60 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 7.99 Temp: 13.29 °C ORP: -109 mV Cond: 1.84 M S/cm  
DO: 1.04 Turbidity: 82.1 NTU  
Meter Model: Hach D-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: N/A  
MS/MSD ☐ Yes ☒ No MS/MSD ID: N/A  
Field Blank ID: N/A (if applicable)  
Trip Blank ID: BIA N/A 2974  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A  
Laboratory Analysis: VOC, SVOC, METALS (AS Cd, Be, Pb)  
No. of Containers: 6 Sample Time: 13:10

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/10/04

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PECO Quarterly GWS

Personnel: RAG, JLM, V

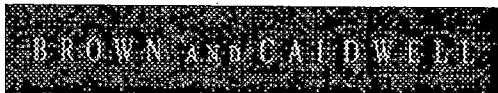
Purge/Sample Depth: 5.71

Project Number: 23867008

Well ID: MW-14

Sample ID: MW-14

[illegible]



110 Commerce Drive  
Allendale, NJ 07401

## LOW-FLOW GROUNDWATER SAMPLING FIELD DATA

Well Number: MW-15  
Sample I.D.(s): \_\_\_\_\_ (if different from well no.)

Project: PECO Quarterly GWS  
Personnel: RAG, SLM

Date: 11/11/04 Time: 11:00  
Weather: Partly Sunny Air Temp.: 48°F

### WELL DATA:

Casing Diameter: 4 in. Casing Material: PVC  
Intake Diameter: 6 in. Intake Material: Cast Iron Steel  
DEPTH TO: Static Water Level: 8.52 ft Bottom of Well: 15.45 ft Screen Length: 10 ft  
DATUM: ☒ Top of Protective Casing ☐ Top of Well Casing ☐ Other: \_\_\_\_\_

CONDITION: Is well clearly labeled? ☒ Yes ☐ No  
Is prot. casing/surface mount in good cond.? (not bent or corroded) ☒ Yes ☐ No  
Does weep hole adequately drain well head? ☒ Yes ☐ No  
Is concrete pad intact? (not cracked or frost heaved) ☒ Yes ☐ No  
Is padlock functional? ☒ Yes ☐ No ☐ NA Is inner casing intact? ☒ Yes ☐ No  
Is inner casing properly capped and vented? ☒ Yes ☐ No

### PURGE DATA:

Pump: Pump Type PERISTALTIC Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Distance from well to flow cell: \_\_\_\_\_ ft  
Purge Depth: 13.40 ft. Avg. Pumping Rate: 70 mL/min Elapsed Time: 30 min Volume Pumped: 0.6 gal  
Was well evacuated? ☐ Yes ☒ No  
Purging Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned

### SAMPLING DATA:

Pump: Pump Type PERISTALTIC Manufacturer: Solinst Model Number: 03647  
Cooling Shroud? ☐ Yes ☐ No  
Tubing: Material: Poly Inner Diameter: 3/8 in.  
Sampling Equipment: ☒ Dedicated ☐ Prepared Off-Site ☐ Field Cleaned  
Sampling Depth: 13.40 ft. Sampling Pumping Rate: 70 mL/min  
Metals samples field filtered? ☐ Yes ☒ No Method: \_\_\_\_\_ Filter Size: \_\_\_\_\_  
Appearance: ☒ Clear ☐ Turbid ☐ Color: \_\_\_\_\_ ☐ Contains Immiscible Liquid  
Field Determinations: pH: 8.67 Temp: 13.3 °C ORP: -31 mV Cond: 1.80  
DO: 0.58 Turbidity: 15.2 NTU  
Meter Model: Hanna U-22 Meter S/N: 03828  
QA/QC Information: Duplicate ☐ Yes ☒ No Duplicate ID: \_\_\_\_\_  
MS/MSD ☐ Yes ☒ No MS/MSD ID: \_\_\_\_\_  
Field Blank ID: \_\_\_\_\_ (if applicable)  
Trip Blank ID: 2975  
Hach Kit Results: Fe: N/A Mn: N/A S: N/A CO<sub>2</sub>: N/A  
Cl: N/A  
Laboratory Analysis: VOC, SVOC, METALS (As, Cd, Pb, Be)  
No. of Containers: 6 Sample Time: 11:45

This data sheet must be filled in completely and correctly at time of sampling (specify NA when not applicable).

I certify the information provided is accurate and the sample was collected in accordance with applicable regulatory and project protocols.

Signature: [Signature] Date: 11/11/04

# LOW-FLOW GROUNDWATER FIELD DATA SHEET

Project Name: PICO Quarterly GWS

Personnel: RAG, SAM ✓

Purge/Sample Depth: \_\_\_\_\_

Project Number: 23867-008

Well ID: MW-15

Sample ID: MW-15

[illegible]

# ELAB OF TENNESSEE CHAIN OF CUSTODY RECORD

Nº 32225

Ship to:  
**ELAB of Tennessee**

227 French Landing Drive  
Suite 550  
Nashville, TN 37228  
Attn: Analytical Laboratory  
(615) 345-1115 (phone)  
(615) 846-5426 (fax)

Send Results to:

Name M. H. WATKINS  
Company BROWN & CALDWELL  
Address 770 LACRME DR. SUITE 310  
City, State, Zip MIDLEBORO, OH 44130  
Phone 440-876-4400  
Fax 440-876-3400  
E-mail \_\_\_\_\_

Send Invoice To:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order \_\_\_\_\_  
E-mail \_\_\_\_\_

Details:

Page 1 of 1  
Cooler No. 1 of 2  
Date Shipped 11/1/04  
Shipped By FEDER

Turnaround STANDARD  
(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

Project No./Name <u>72867.008 / PRCO QUARTERLY GW</u>					Samplers (Signature)*		ANALYSIS REQUIRED		No. of Bottles	Lab Use Only Containers/Pres.
Lab Use Only Lab #	Date Sampled	Time	Comp./ Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.			
	11/1/04	0900	-	TRIP BLANK # 2975	-	-	-	VOC (BTEX)	2	
	11/1/04	1005	G	MW-11 MS/MSD	GW	7.64 / 15.2	1.03	VOC (BTEX), SVOC (PAH), METALS (As, Be, Cd, Pb)	18	
	11/1/04	1145	G	MW-15	GW	7.63 / 13.30	1.80		6	
	11/1/04	1205	-	EG111104	WA-02	-	-		6	
	11/1/04	1250	G	MW-9	GW	8.70 / 11.53	0.547		6	

Sample Kit Prep'd by: (Signature) <u>Brian R. [Signature]</u>	Date <u>11/5/04 1430</u>	Received By: (Signature) <u>[Signature]</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date/Time <u>11/1/04 1600</u>	Received By: (Signature)
Relinquished by: (Signature)	Date/Time	Received By: (Signature)
Received for Laboratory by: (Signature)	Date/Time	Temperature

## REMARKS

\*Signature required to ensure validity

Lab Use Only			
VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill # \_\_\_\_\_

CAR # \_\_\_\_\_



# ELAB OF TENNESSEE CHAIN OF CUSTODY RECORD

N: 32221

Ship to:  
**ELAB of Tennessee**

227 French Landing Drive  
Suite 550  
Nashville, TN 37228  
Attn: Analytical Laboratory  
(615) 345-1115 (phone)  
(615) 846-5426 (fax)

Send Results to:

Name M. H. C. WATKINS  
Company 2100 N. 1st St. Nashville  
Address 750 Locust Dr. Suite 300  
City, State, Zip Nashville, TN 37203  
Phone 615 516-4420  
Fax 615-876-1420  
E-mail \_\_\_\_\_

Send Invoice To:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order \_\_\_\_\_  
E-mail \_\_\_\_\_

Details:

Page 1 of 1  
Cooler No. 1 of 1  
Date Shipped 11/19/04  
Shipped By EXP Ex  
Turnaround Standard  
(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

Project No./Name 23867 008 TACO RAMPWAY GW						Samplers (Signature)* [Signature]				
Lab Use Only Lab #	Date Sampled	Time	Comp./ Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.	ANALYSIS REQUIRED	No. of Bottles	Lab Use Only Containers/Pres.
	11/19/04	1035	G	NW-2	GW	8.0 / 12.0	213	VOC (BTEX), SVOC (PAH) METALS (AS, ZN, CD, Hg)	6	
	11/19/04	175	G	NW-4	GW	7.38 / 12.92	429		1	
	11/19/04	9490	G	DUFFIN 0904	GW	—	—		1	
	11/19/04	1245	G	NW-5	GW	7.42 / 13.5	770		1	
	11/19/04	0400		Tail Bank #2773	—	—	—	VOC (BTEX)	2	

Sample Kit Prep'd by: (Signature) <u>[Signature]</u>	Date <u>11/19/04 1450</u>	Received By: (Signature) <u>[Signature]</u>	REMARKS *Signature required to ensure validity	Lab Use Only			
Relinquished by: (Signature) <u>[Signature]</u>	Date/Time <u>11/19/04 1700</u>	Received By: (Signature)		VOA Headspace	Y	N	NA
Relinquished by: (Signature)	Date/Time	Received By: (Signature)		Field Filtered	Y	N	NA
Received for Laboratory by: (Signature)	Date/Time	Temperature		Correct Containers	Y	N	NA
				Discrepancies	Y	N	NA
				Cust. Seals intact	Y	N	NA
				Containers Intact	Y	N	NA
				Airbill #			
				CAR #			

# ELAB OF TENNESSEE CHAIN OF CUSTODY RECORD

NR 32223

Ship to:  
**ELAB of Tennessee**

227 French Landing Drive  
Suite 550  
Nashville, TN 37228  
Attn: Analytical Laboratory  
(615) 345-1115 (phone)  
(615) 846-5426 (fax)

Send Results to:

Name M. H. WATKINS  
Company PERIOD I CALDWELL  
Address 7750 LUCAS DR SUITE 300  
City, State, Zip MINNAPOLIS MN 55412  
Phone 952-826-4900  
Fax 952-826-7400  
E-mail \_\_\_\_\_

Send Invoice To:

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Purchase Order E  
E-mail \_\_\_\_\_

Details:

Page 1 of 1  
Cooler No. 1 of \_\_\_\_\_  
Date Shipped 11/10/04  
Shipped By COY

Turnaround STANDARD  
(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

Project No./Name 23867 008 / PECO QUARTERLY GW						Samplers (Signature)*					
Lab Use Only Lab #	Date Sampled	Time	Comp./ Grab	Sample Location/Description	Sample Matrix	Field pH/Temp	Field Cond.	ANALYSIS REQUIRED	No. of Bottles	Lab Use Only Containers/Pres.	
	11/10/04	1145	G	mw-12	GW	7.16 17.01	0.478	VOC (PEX) (VOC (PAH) METALS (As, 20, Cd, Pb)	6		
	11/10/04	1159	G	mw-13	GW	7.25 15.28	0.563	↓	↓		
	11/10/04	1310	G	mw-14	GW	7.49 13.29	1.84	↓	↓		
	11/10/04	1000	G	T&P BANK # 2974	---	---	---	VOC (PEX)	2		

Sample Kit Prep'd by: (Signature) <u>[Signature]</u>	Date <u>11/5/04 1430</u>	Received By: (Signature) <u>[Signature]</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date/Time <u>11/10/04 1600</u>	Received By: (Signature) _____
Relinquished by: (Signature) _____	Date/Time _____	Received By: (Signature) _____
Received for Laboratory by: (Signature) _____	Date/Time _____	Temperature _____

## REMARKS

\*Signature required to ensure validity

## Lab Use Only

VOA Headspace	Y	N	NA
Field Filtered	Y	N	NA
Correct Containers	Y	N	NA
Discrepancies	Y	N	NA
Cust. Seals intact	Y	N	NA
Containers Intact	Y	N	NA

Airbill # \_\_\_\_\_

CAR # \_\_\_\_\_

11/9/04 23867.008

Sunny Coors

09<sup>10</sup> JLM, MPC onsite

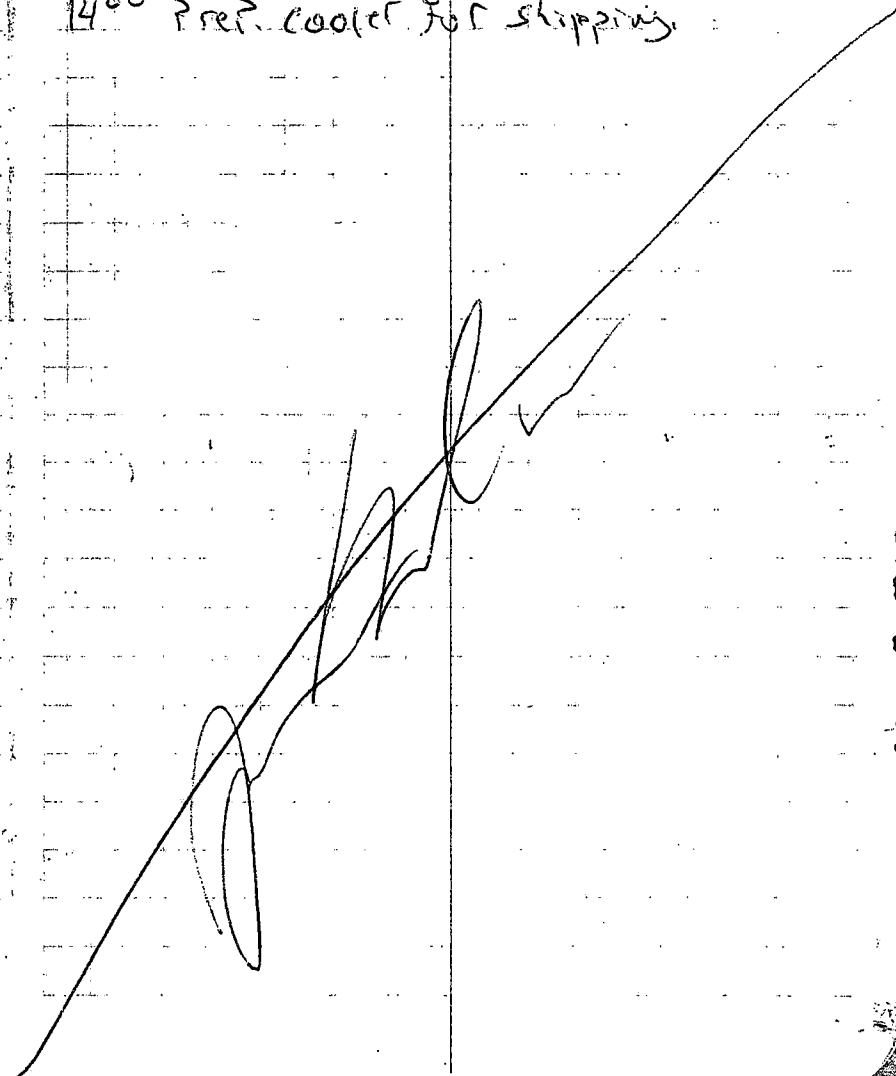
Time	Well ID	DTW	ATP	T.D	Comments
09 <sup>13</sup>	MW1	14.76'	15.20'	17.47'	
09 <sup>15</sup>	9	11.12'	—	16.84'	
09 <sup>20</sup>	15	8.75'	—	15.45'	
09 <sup>22</sup>	14	5.46'	—	15.50'	
09 <sup>23</sup>	13	10.99'	—	15.86'	
09 <sup>26</sup>	12	12.00'	—	16.71'	
09 <sup>29</sup>	11	13.29'	—	16.81'	
09 <sup>38</sup>	5	9.15'	—	15.10'	
09 <sup>36</sup>	2	9.83'	—	13.31'	
09 <sup>33</sup>	4	9.11'	—	14.59'	
NA	3	—	—	NA	
NA	6	—	—	NA	

09<sup>45</sup> setting up to sample MW-2. Calibrating W.Q. meter.09<sup>54</sup> Purging @ MW-2  
80 ml/min10<sup>35</sup> Sampling @ MW-211<sup>02</sup> Purging @ MW-4  
90 ml/min11<sup>35</sup> Sampling @ MW-4

11/9/04

12<sup>05</sup> Purging @ MW-5, 120 ml/min12<sup>45</sup> Sampling @ MW-5

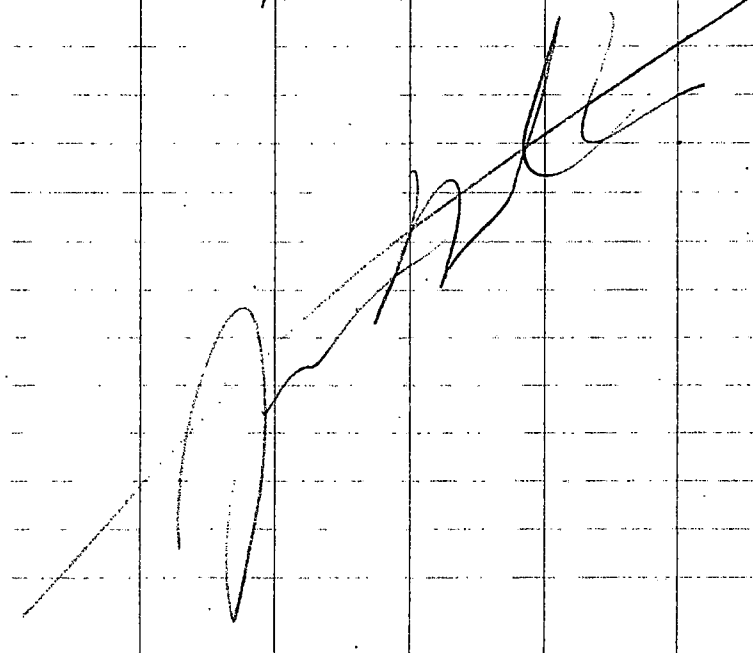
DWP 110901

13<sup>30</sup> MPC/JLM offsite14<sup>00</sup> Prep. cooler for shipping.

23867, 028

11/12/04

Sunny - 40s

- 0000 - JLM / RAG ON-SITE  
 1010 - Purgina @ MW-12; 160 n/min  
 1045 - SAMPLE @ MW-12  
 1112 - Purgina @ MW-13; 100 n/min  
 1159 - SAMPLE @ MW-13  
 1220 - Purgina @ MW-14; 60 n/min  
 1310 - SAMPLE @ MW-14  
 1330 - JLM / RAG OFF-SITE
- 

23867, 028

11/12/04

Sunny - 50s

- 0900 - JLM / RAG ON-SITE  
 0930 - Purgina @ MW-11; 160 n/min  
 1015 - SAMPLE @ MW-11  
 MS/US  
 1054 - Purgina @ MW-15; 70 n/min  
 1145 - SAMPLE @ MW-15  
 1205 - EBI 1104  
 1215 - Purgina @ MW-9; 160 n/min  
 1250 - SAMPLE @ MW-9

- SPARE w/ WIRE WAITING REGARDING  
 EVENT. INFORMED HIM THAT NINE  
 OUT OF 10 WELLS WERE SAMPLED.  
 ALSO, LET HIM KNOW THAT ON SITE  
 CONTRACTOR REQUESTED THAT MW-15  
 BE MADE INTO FRESH MOUNT WELL BY  
 NEXT WEEK DUE TO PAVING TO  
 OCCUR.

- 1330 - JLM / RAG OFF-SITE

No. 32224

# ELAB of Tennessee

**Suite 550**

**Nashville, TN 37228**

**Attn: Analytical Laboratory**

(615) 345-1115 (phone).

(615) 846-5426 (fax)

**Send Invoice To:**

### Details:

Name MIKE WATKINS

Company Brown & Caldwell

Address 7750 Lacoste Dr, Suite 30

City, State, Zip M. O. P. B. R. C. H. E. N. S. D. N.

Phone 440-826-7900

Fax 440-826-3400

E-mail

Name

Company

Address

City, State, Zip

Phone

## Purchase Order

E-mail

Page 1 of 1Cooler No. 1 of 1

Date Shipped 11/9/89

Shipped By FED EX

Turnaround 5-11-73

(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

[illegible]



No 32223

### Details:

Page 1 of 1  
Cooler No. 1 of         
Date Shipped 11/10/04  
Shipped By Fed Ex  
  
Turnaround STANDARD  
(Std. Turn unless noted otherwise / There  
may be a surcharge for RUSH-contact lab

[illegible]

Nº 32225

# ELAB of Tennessee

**(615) 846-5426 (fax)**

### Details:

E-mail

E-mail

(Std. Turn unless noted otherwise / There may be a surcharge for RUSH-contact lab)

[illegible]